volume 48:number 4
2016 spring

ROM

MAGAZINE *of the* ROYAL ONTARIO MUSEUM

EARTH'S FIRST LIFE

A STORY BILLIONS OF YEARS IN THE MAKING p. 24

CANADA'S ASTRONAUT

CHRIS HADFIELD TALKS RISK, ADVENTURE AND THE ROM

p. 30

TATTOOS:

ANCIENT INK, MODERN ART

p. 18

WENDICERATOPS

THE SCIENCE BEHIND THE MUSEUM'S NEW DINO

p. 10

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SPRING 2016
Display until May 23, 2016

* **TURN FOR MORE** *ON THIS REMARKABLE 508-MILLION-YEAR-OLD CREATURE*

BEGINS HERE

Hallucigenia Sparsa, shown here in its fossilized state as it was found in Yoho National Park, British Columbia. The fossil site, known as the Burgess Shale, is one of Earth's most important fossil deposits. Although it is unlikely that *Hallucigenia*, was Earth's first life, it was one of the more unusual creatures (with a fossilized record) that lived during the Cambrian Explosion, a period of rapid evolutionary change starting about 500 million years ago. Some researchers believe *Hallucigenia*, which ranged in size from 10–55mm long, represents an early ancestor of the living velvet worms.

Discover more about the ROM's research into Earth's earliest life forms on page 24.

ON THE COVER
Hallucigenia Sparsa
illustration by
Danielle Dufault

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Upcoming gallery traces our family tree over 500 million years

MARY BURRIDGE

ASSISTANT CURATOR, ICHTHYOLOGY

Mary is the lead curator for the Patrick and Barbara Keenan Family Gallery of Hands-on Biodiversity. Her other curatorial work includes managing the frozen fish tissue collection, research on Indo-Pacific gobies, and teaching Ontario fish identification workshops.

JACQUELINE MILLER

MAMMALOGY TECHNICIAN

Jacqueline is a mammalogist currently completing her PhD at the University of Toronto. A large part of her time is spent on specimen preparation, and she was the ROM representative on the team that prepared the second blue whale, at Rocky Harbour, Newfoundland, in 2014.

SARA SCHARF

SCIENCE WRITER

Sara Scharf is a freelance scientific editor and writer with a passion for underappreciated and unusual organisms. She has a Ph.D. in the history and philosophy of science and technology.

CORRECTION

In our Winter 2016 issue (*Hidden Spaces*) we mentioned that Peter Swann was the last occupant of the old director's office above the Rotunda entrance. In fact, Dr. James Cruise, ROM Director from 1975 to 1985, was the last person to occupy the office.

CONTACT US

Questions? Comments? Email us at magazine@rom.on.ca.

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Royal Ontario Museum
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Sheeza Sarfraz

PHOTOGRAPHY
Brian Boyle

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TELLING ROM STORIES

Social media has given us a new way to share what makes the ROM extraordinary

The best ROM stories often take on a life of their own beyond the Museum's walls... And that's exactly what happened recently when the photo of 97-year-old legendary tattooist Whang Od (pictured right) appeared on Twitter, holding a copy of *ROM* magazine with her featured on the cover! Whang Od practices her trade in skin art in the remote Buscalan village in the Philippines where as the last mambabatok (traditional tattoo artist in the Kalinga province), she has been nominated as a National Living Treasure. I was impressed to learn that she is also a social media star with a bevy of YouTube videos and her own Facebook page! I should be so connected!

So how did a copy of our Members' magazine make its way across the world to Buscalan village? That creative idea was the work of ROM Senior Curator of Entomology, Chris Darling, (you can read about Chris's own tattoo experiences on page 22 of this issue). Chris knew that Lars Krutak, a well-known tattoo anthropologist and consultant on the ROM's *Tattoos* exhibition (and host of *The Tattoo Hunter* on the Discovery Channel), was travelling to the Philippines to visit Whang Od. He asked Lars to present her with a copy of *ROM* magazine, and take a picture. The rest of course is social media history!

The second story that has received world-wide media attention recently is the stunning research undertaken by Jean-Bernard Caron, ROM Senior Curator of Invertebrate Palaeontology, on the early evolutionary history of animals on Earth during the "Cambrian Explosion" 500 million years ago. Jonathan Kay, editor-in-chief of *The Walrus*, wrote an article about Jean-Bernard's discoveries in the March 2016 issue (you can read the full article, "Even Cooler than Dinosaurs," on thewalrus.ca). Kay describes how Jean-Bernard and his colleagues have been able to trace the paths of our earliest ancestors to relatives in the present-day fauna, including humans. As with the story of Whang Od, it is reassuring to learn that we are all connected! To learn more about the ROM's discoveries, please see "Discovering Earth's First Life" on page 24 of this issue (spoiler alert: 500-million-year-old genetic forefathers make SpongeBob look positively handsome)!

The tweet by Lars Krutak showing 97-year-old tattoo artist and ROM magazine cover model, Whang Od.

If you'd like to see more of Whang Od and her tattoo work, a video of Whang Od creating tattoos with traditional tools is part of the *Tattoos* exhibition at the ROM.

Tattoo hunter Lars Krutak will be presenting a ROM Speaks lecture on June 14 where he will share more about his Philippine adventure.

The next chapter of our ROM story starts in April as we welcome Josh Basseches, our new Director and CEO to the Museum. You'll hear more from Josh in our May issue.

I hope you enjoy this edition of *ROM* magazine, and next time you're at the Museum, tweet us at **@ROMtoronto** with highlights of your visit!

Mark D. Engstrom

MARK ENGSTROM
INTERIM DIRECTOR AND CEO

COMING IN MAY

IN OUR SUMMER ISSUE

CHIHULY EXHIBITION
Q & A with artist Dale Chihuly

HIDDEN SPACES
Close up of bees in the Patrick and Barbara Keenan Family Gallery, Hands-on Biodiversity

member news

calendar / special events / special offers / meet a member

APRIL

Member Preview

TATTOOS: RITUAL. IDENTITY. OBSESSION. ART.

April 1, 10:00 a.m. to 6:00 p.m.
April 2, 10:00 a.m. to 12:00 p.m.

EXCLUSIVE MEMBER TOURS

New!

Registration required, space limited to 30 participants.

WOMEN ROCK!
April 15, 11:00 a.m. to 12:30 p.m.
April 30, 11:00 a.m. to 12:30 p.m.
Hear stories of some of the most powerful women in history, who have inspired literature and films centuries after their deaths.

ALL THE WORLD'S A TEACUP
April 16, 1:00 to 2:30 p.m.
April 29, 1:00 to 2:30 p.m.
This tour is an ideal blend of tea and culture—from Japanese tea ceremonies to tea parties with mummies.

MAY

Member Preview

THIRD GENDER

May 6, 10:00 a.m. to 6:00 p.m.

MEMBER SPRING FLING

May 19, 6:00 to 9:00 p.m.

EXCLUSIVE MEMBER TOURS

New!

Registration required, space limited to 30 participants.

MURDERS & ACQUISITIONS: LEADERSHIP STYLES FROM THE ANCIENT CORNER OFFICE
May 13, 11:00 a.m. to 12:30 p.m.
May 28, 11:00 a.m. to 12:30 p.m.
Discover the world's greatest leaders and the skills that built their empires.

BLOOD, SWEAT & OLIVE OIL: 3,000 YEARS OF SPORT
May 14, 1:00 to 2:30 p.m.
May 27, 11:00 a.m. to 12:30 p.m.
From ancient Olympians and gladiators to medieval jousting and even slaying dragons, discover the action-packed history of sport.

JUNE

CHIHULY OPENING PARTY

June 23, 2016
Tickets available for purchase at rom.on.ca

Member Preview

CHIHULY

June 24, 10:00 a.m. to 6:00 p.m.
June 25, 10:00 a.m. to 12:00 p.m.

Young Patrons Circle

TOUR OF THE SANDRA AINSLEY GALLERY

April 14, 2016

FIND OUT MORE

Visit **rom.on.ca/whatson**
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April 9 & 10

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MEMBER PROFILE

Dedicated Member

RAPID-FIRE QUESTIONS WITH **IAN LEAVER**

Ian Leaver in the Eaton Gallery of Rome.

Ian Leaver is a 25-year-old ROM Member with autism who visits the Museum often, touring the exhibitions and spending time with other ROM visitors and staff. Ian's mother, Wendy, says that although Ian does not ask many questions due to his disability, his visits to the ROM have brought out a curiosity she has not seen in him before.

1 What inspired your first visit to the ROM?
I like dinosaurs and my sister gave me a Membership.

2 How would you describe the ROM to a friend who had never visited the Museum before?
The people are friendly and there is a lot to see.

3 If you could bring one person to visit the ROM with you, who would it be?
My mom: she always takes care of me.

4 Could you describe your experience at the ROM?
It is a quiet and comfortable place for me to spend time.

5 If you were to plan a perfect day out with your family, what would you plan to do before and after your visit to the ROM?
I would go out to lunch before the ROM and afterwards I would like to go to a movie.

6 Are there specific places in the Museum you find yourself coming back to visit?
I like the ancient Egyptian gallery and the mummy. I also like the dinosaurs.

7 What do you consider the greatest benefit to your ROM Membership?
I can go there every weekend. The people are so welcoming. It feels good to be there. The staff are great.

8 Have you had any fun and interesting experiences at the ROM that we haven't asked about?
When I spend a day at the Museum, I often enjoy my lunch in the cafeteria.

ACCESS PROGRAMS AND SERVICES

The ROM recognizes the diversity of our visitors' abilities and needs, and offers services to ensure accessibility.

In collaboration with Autism Ontario and the ROM Accessibility Advisory Committee, we've developed an online ROM Guide for Visitors with Autism. For visitors with vision loss, we offer services that will enhance visitor experience through touch and audio description. For visitors who are deaf or hard of hearing, we offer assistive listening devices or American Sign Language interpretation. We also offer a program for visitors with dementia to attend with their companions. For more information visit **rom.on.ca/access**.

Ian Leaver photo by Roger Yip

MEMBER EVENTS

HOLIDAY PARTY

WILDLIFE PHOTOGRAPHER OF THE YEAR PREVIEW

SPECIAL MEMBER TOURS

ROM Members enjoying activities and programs at the Museum. We hope you'll join us soon.

UPCOMING EVENTS

MEMBER PREVIEW:
TATTOOS **APRIL 1–2**

MEMBER PREVIEW:
A THIRD GENDER **MAY 6**

MEMBER
SPRING FLING **MAY 19**

MEMBER PREVIEW:
CHIHULY **JUNE 24–25**

For more information go to
rom.on.ca/members/events

NEW ACQUISITIONS

The Grand Pelike

This ancient Greek vessel exhibits remarkable skill and decoration

In approximately 300 BC, the main centre for the production of Gnathian ware pottery was likely Taranto, Apulia, in southern Italy. Production there likely began around 370–360 BC and continued until circa 272 BC, when Taranto was captured by Rome.

This very large Gnathia ware vessel was recently acquired to complement the Museum's existing collection of 32 Gnathia ceramics. This vessel stands out from others in the collection because of its size—at 63.5 cm tall, it is significantly taller than the next tallest, which measures 22 cm. This is one of the largest pelikes that Paul Denis, Assistant Curator of Greek and Roman collections, has seen. Paul says that given both its size and its quality, the vessel is a very rare example of its type. Paul found both the skillful construction and decoration of this vessel particularly remarkable.

CONSTRUCTION

The calibre of the work is evident in both the forming of the vessel and the treatment of the surface. The boldly modelled egg pattern on the rim of the mouth. The handmade ribbing was carefully tooled with properly convex surfaces and deftly finished tops that were filled with white paint to set them off.

DECORATION

Like all Gnathia ware ceramics, this example was covered with a black slip (usually dipped), then decorated with white, red, and yellow pigments applied directly to the surface of the dried black slip after firing. The neck is painted with abstract motifs and a gold-painted necklace with an intricate criss-crossing chain and amphora-shaped pendants. Each opening within the chain contains a tiny white rosette, and a string of white beads appears above the necklace. The ribbing on the body is interrupted by a band (frieze) showing continuous pairs of confronting white swans bracketing a stylized yellow-floral motif. Their beaks and feathers are highlighted in yellow.

SEE THIS REMARKABLE VASE ON DISPLAY IN THE GALLERY OF GREECE

Black slip earthenware with added painted decoration, c. 320–300 BC. From Taranto, Apulia (southern Italy).

HEIGHT: 63.5 CM

Dale Chihuly, Persian Ceiling, 2012, 25 × 15 ft. Montreal Museum of Fine Arts, installed 2013.

EXHIBITION

CHIHULY

Experience groundbreaking explorations in colour, light, and form by Dale Chihuly, a pioneer of the studio glass movement and one of the world's foremost artists working in glass today. The artwork, created by sand, fire, and human breath, offers viewers a sensory adventure like no other.

CHIHULY IS COMING TO THE ROM FROM JUNE 25, 2016, TO JANUARY 2, 2017.

BECOME A ROM MEMBER AND **GET UNLIMITED FREE ENTRY** TO *CHIHULY*, OR FOLLOW **@ROMTORONTO** AND LOOK FOR THE TICKETS ON SALE ANNOUNCEMENT

WITH SINCERE THANKS TO SUPPORTING SPONSORS SAKS FIFTH AVENUE CANADA AND DELTA AIR LINES.

NEW FROM ROM PRESS

AFRICA IN THE MARKET

20th-Century Art from the Amrad African Art Collection

Africa in the Market, a new book from ROM Press, explores the significance of 20th-century artistic production as a material component of local traditions and, at the same time, as artifacts circulating in a global market where local specificities are often lost. This book addresses key issues of market trends, the transformation in taste and aesthetics in relation to changing historical conditions, and the significant role that artisans, traders, and collectors play in mediating knowledge and value in the international art market.

ABOUT THE AUTHORS

Silvia Forni is Curator of Anthropology at the Royal Ontario Museum, and **Christopher Steiner** is the Lucy C. McDannel '22 Professor of Art History and Anthropology and Director of Museum Studies at Connecticut College.

Now available in the ROM Boutique and online at shop.rom.on.ca.
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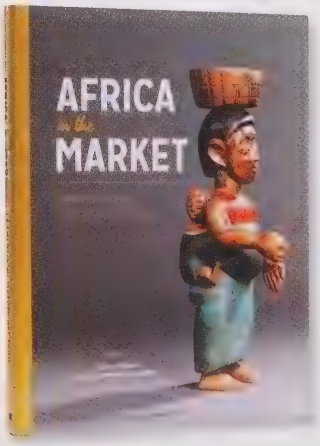

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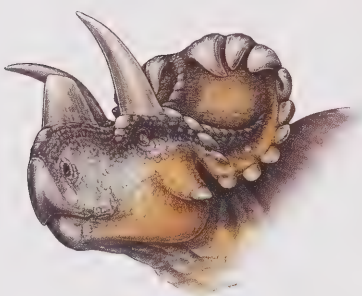
ROM RESEARCH

Detailing Wendiceratops

DAVID EVANS AND **MICHAEL RYAN** REVEAL A SPECTACULAR NEW SPECIES OF CERATOPSIAN



ABOVE: David Evans, Michael Ryan, and their team had to excavate tonnes of rock near Milk River, Alberta, to reveal the *Wendiceratops* fossils. LEFT: An artist's rendering of the *Wendiceratops* dinosaur's face details.

Fossils collected from a bonebed in southern Alberta during the summers of 2011 through 2014 have led David Evans, James and Louise Temerty Chair of Vertebrate Palaeontology at the ROM, and his colleague Michael Ryan, Curator of Vertebrate Palaeontology at the Cleveland Museum of Natural History, to discover a new species of horned dinosaur: *Wendiceratop spinhornensis*. The generic name means "Wendy's Horned Face," honouring fossil hunter Wendy Sloboda, who found the bonebed in 2010; "Wendy" is combined with *ceratops* (Greek for horned-face). The species name refers to the location of the bonebed in Pinhorn Provincial Grazing Reserve.

Over 200 bones from virtually all parts of the skeletons of four individuals have helped increase the understanding of the early evolution of horned dinosaurs. According to research by Evans and Ryan, *Wendiceratops* was approximately 6 metres (20 feet) long and weighed more than a ton (2,000 lbs). A herbivore, it would crop low-lying plants with a parrot-like beak and grind them up with dozens of leaf-shaped teeth.

WENDICERATOPS *WAS APPROXIMATELY 6 METRES FROM NOSE TO TAIL AND WEIGHED MORE THAN A TON (2,000 LBS)*

*Wendiceratop*s was found in the lower part of the Oldman Formation and lived in the Late Cretaceous Era, about 79 million years ago, making it one of the oldest known members of the family of rhino-like horned dinosaurs that includes the iconic *Triceratops*.

DESCRIBING THE HEAD AND FACE

Importantly, 12 different, well-preserved skull bones were recovered, including parts of the highly adorned neck shield that projects from the back of the head. Many of the skull bones display the channels through which blood vessels would have run along the bone surface, which is typical of adult horned dinosaurs, but *Wendiceratops* has particularly striking head ornamentation: a series of forward-curling hook-like horns along the edge of a broad frill that projects from the back of its skull.

Although the nasal structure is not completely known, Evans and Ryan infer *Wendiceratops* to have a prominent, upright nasal horn located close to the eyes, which would be the oldest example of this feature in horned dinosaurs, indicating evolutionary transition between the low, rounded forms of the earliest horned dinosaurs and the large, tall horns of *Styracosaurus*, and its relatives in the Cretaceous Period, about 75 million years ago.

Their research also reveals that an enlarged nasal horn arose at least twice in the horned dinosaur family, once in the short-frilled group that includes *Wendiceratops* and again in the long-frilled group that includes *Triceratops*. This new information is surprising, since a pronounced nose horn has long been thought to exist in their common ancestor. In addition to inclusion in the PLOS ONE journal, the discovery also made news in several publications including Discover Magazine's feature "Top 100 Science Stories of 2015." –SHIONA M. MACKENZIE ◘

READ MORE

Wendiceratops spinhornensis is described in a paper by Evans and Ryan, published in the open access journal PLOS ONE at **plos.org**. Read more about the dinosaur at **rom.on.ca**.

Wendiceratops face and head detail by Danielle Dufault. Field photo by David Evans.

3D RENDERING

BUILDING AN EXHIBITION

How do you design a travelling exhibition?

By **LUCIANA CALVET** and **MARGOT THOMPSON**

Museum exhibitions typically fall into two broad categories. They are either assembled from scratch by a museum's curatorial team, or one institution puts together an exhibition that then travels across various other museums as a means of intellectual collaboration. In this case, *Tattoos: Ritual. Identity. Obsession. Art.* was developed by the musée du quai Branly and displayed in Paris in 2014, before making its way across the Atlantic to the ROM.

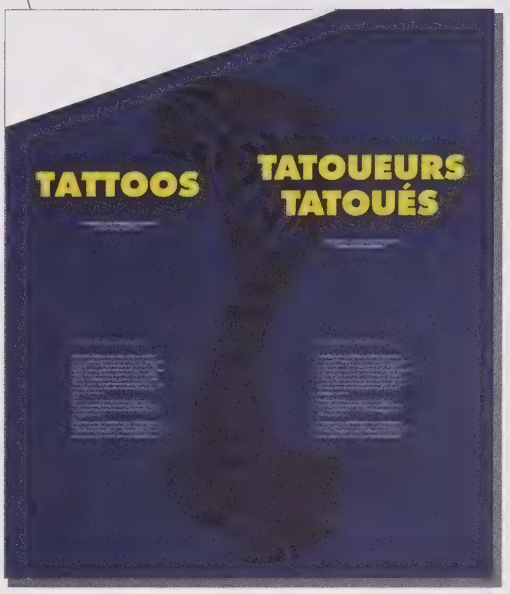
Often, when working with a travelling show, it is only artifacts that travel, which means that every museum has to create new "exhibitry" for the exhibition. We don't quite start from scratch, but sometimes it feels like it! With *Tattoos*, we had to consider a new design treatment for display elements, environmental media, and graphic treatments. Design looks at all of the elements that make up an exhibition: how the ideas of the exhibit can be expressed, the physical qualities of the artifacts, the space it will be presented in, the audience the show is intended for, and the overall experience.

The first issue confronting us was that *Tattoos* began its life in a sprawling horizontal space, while our gallery is smaller but very vertical. In the early stages of the exhibition, we started by thinking about the overall look of the show—the style direction appropriate for the story, the objects, and the visitors. We have a striking space to work with in the Roloff Beny Gallery. While envisioning the show, one of the things that came to mind was that we could "tattoo" the soaring walls in the space, and this became a key element of the graphic design.

Tattoos is a show that focuses on the artistic expression of a living art form, so the experience is one that has a contemporary art feel, highlighted by real artifacts, some from our own collection. This exhibit does cover a lot of ground. Historical developments are highlighted, but it also has an edgier, more modern side. We've tried to build a design style that bridges the divide with an aesthetic that's modern but not too attention-grabbing. We can't wait for you to see the results!

LUCIANA CALVET and **MARGOT THOMPSON** are exhibit designers in the Creative department of the Royal Ontario Museum.

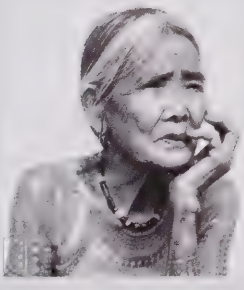
GRAPHIC DESIGN FOR THE TITLE WALL



3D RENDERING

Three dimensional views and graphic design for *Tattoos: Ritual. Identity. Obsession. Art.* The graphic on the title wall of the exhibition is inspired by traditional Polynesian tattoo design.

Just a few of the impressive photographs that are included in the ROM's *Tattoos* exhibition

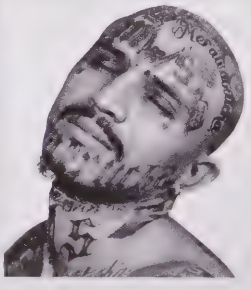


Fang-od Oggay (b.1920). Photo by Jake Verzosa.

'Portrait 6: Muay Thai Boxer, Bangkok'. Photo by Cédric Arnold. Bangkok, Thailand. 2008-2011.

Tattooed design on a woman's torso. Silicone. © Tin-Tin. France, 2013

'Untitled 2: Tattoo details of a Man's hands, arms and chest'. Photo by Cédric Arnold.



Untitled. Serie Maras, 2006. Photo by Isabel Muñoz.

photo by Thomas Duval. 'Untitled 2: Tattoo details of a Man's hands, arms and chest' by Cédric Arnold. Courtesy Galerie Olivier Waltman. Untitled. Serie Maras, 2006. by Isabel Muñoz.

LIZA'S GARDEN

The ROM's innovative green roof collects rainwater, provides wildlife habitat, and insulates the building

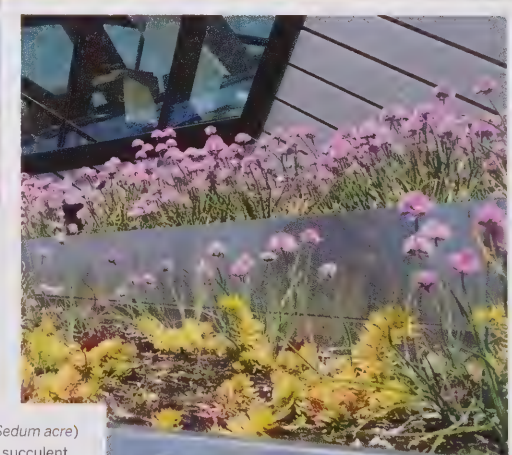
What is it?
The roof garden on top of the Michael Lee-Chin Crystal is named after the late Elizabeth Samuel, who served the Royal Ontario Museum in many roles, including as Chair of the Board of Trustees and as a founding member of the Heritage Governors. In both capacities, she continued the Samuel family's century of extraordinary generosity to the Museum.

What does it do?
The roof garden acts in several ways to enhance the sustainability of the ROM through storm water retention, reduction of the heat-island effect, and the provision of a habitat for birds and insects.

1. Research and monitoring programs on bees and other pollinators have been taking place since 2009, led by York University.

2. Serviceberry, sumac, and other shrubs were planted above the roof's structural supports, providing a habitat and food to a wide variety of birds.

3. Green roofs are a dynamic ecosystem, with new plants arriving by wind-dispersed or animal-deposited seed.



WILD CHIVES (*Allium schoenoprasum*)
A typical (non-native) member of the onion and leek family, it is used as a fresh herb for culinary purposes (although we don't harvest them from Liza's Garden!).

MOSSY STONECROP (*Sedum acre*)
This typical (non-native) succulent is used by many green-roof projects because it holds water well.

Made possible by the generous support of Elizabeth Samuel's former board colleagues, her family and friends, and members of the Department of Museum Volunteers. Additional support

PROFILE

New on the Ground (and in Space)

THE ROM'S **MARIANNE MADER** DISCUSSES HER INSPIRATIONS AND WHAT'S NEXT FOR HER

What made you pursue planetary science as a study?
I've met numerous scientists who've known from a young age that they wanted to pursue a certain field. For me it was more of a gradual process. I'm of the *Star Trek* generation—my initial attraction to the field of space exploration was this science fiction series that is all about the human connection and human exploration of cultures. Growing up I didn't think of a career in space exploration. Besides the job of "astronaut" I wasn't aware of other opportunities. I didn't have my definitive "eureka" moment until my mid-20s. Prior to that, I had pursued academic paths that enabled my love of the outdoors and exploration. I knew I was hooked on space science during one of the lectures in the MSc space studies program at the International Space University.

Who was speaking at that class?
Japanese astronaut Chiaki Mukai was discussing human space exploration and group dynamics working in isolated remote environments—topics that I find captivating—and I was hooked. I was fascinated by the human connection in these fields and how we can work together in difficult environments to make something happen. I went on to study human- and robotic-simulated space missions as part of my PhD research.

If you could travel back in time, where would you go?
Part of my research background is studying very old rocks—older than 2.5 billion years. An interesting aspect of studying old rocks is that they essentially give you a window into the past by interpreting the rock record. There are a lot of questions about the conditions on Earth around four billion years ago. It would be amazing to go back to that time!

We could interpret what the environment was like when life started on Earth and the kinds of life we would expect to find. It would be amazing to travel with our lab equipment because what we do now, billions of years later, is make these interpretations based on a kind of historical *CSI*.

What should places like the ROM be doing to foster the public's interest in the origin of life on Earth and the exploration of life on other planets?
The ROM offers tremendous opportunities to engage the public in these topics. One opportunity is through the forthcoming gallery that tells the story of life on Earth and its evolution. You could think of it as the "missing link" between the Teck Suite of Galleries: Earth's Treasures and the James and Louise Temerty Galleries of the Age of Dinosaurs on the second floor of the ROM. We're currently fundraising for the future Dawn of Life Gallery that will showcase key fossils throughout the Earth's history, highlighting how life diversified over time and faced major crises.

Some of these organisms, like samples from the Burgess Shale in British Columbia, are strange by today's standards, and their soft bodies are preserved in remarkable fossils more than half a billion years old. (Read more about this gallery on page 24.)

I also value approaches that incorporate interests of different target audiences with the topic matter. Jean-Bernard Caron, our Curator of Invertebrate Palaeontology, works extensively on Burgess Shale fossils, which have inspired an anime series and manga book in Japan! Here's a community that accesses the ROM's research in a completely different way than we traditionally would. I love that their reconstruction is presented in a pop-culture setting, and at the same time the public can access the ROM's latest research. ◘

Marianne Mader, Axel Heiberg Island, Nunavut (Canadian High Arctic).

Hands-on Biodiversity

UPDATES GALORE FOR ONE OF THE MUSEUM'S MOST POPULAR GALLERIES

By **MARY BURRIDGE** and **DEB METSGER**

The ROM's Patrick and Barbara Keenan Family Gallery of Hands-On Biodiversity (or, as the insiders call it, HoB) was extremely popular this winter. More than 40,000 visitors spun the wheel of life, hid in the fox den, took selfies with big, ugly Asian carps, dressed up like bats, and discovered something new about Ontario's coolest creatures. From tiny blood-sucking leeches and a beautiful tulip tree to Ontario's largest mammal, the majestic moose, HoB has it all.

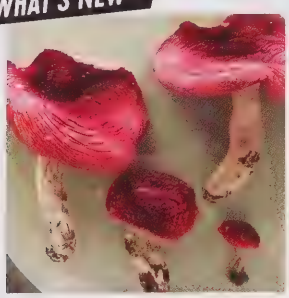
Arguably the most popular gallery at the ROM, HoB opened in the fall of 1999 and has been a great success. Of course the sheer numbers of children handling touchable displays and interactive games have caused items to break, go missing, or just fray and fade with age. Battles with pesky insects have caused mounts of birds and mammals to be totally eaten down to the bone (bug infestations are quite common, as some taxidermy mounts in HoB are exposed in order to give an immersive feeling of communing with nature). Large windows overlooking Philosophers' Walk add a beautiful setting to a natural history gallery, but they also contribute to light damage of everything from pressed plants to butterfly wings.

Despite these issues, the HoB facilitators and volunteers on the front lines and the gallery team behind the scenes have persevered to keep this gallery looking fresh and running smoothly for over 15 years. A generous donation from the Keenan family is providing funding for renovations. Updates include a new entrance experience near the popular Algonquin Park forest diorama; a facelift of the moose enclosure to include iconic Ontario species; and most recently an extensive renovation of the Great Lakes Marsh and Carolinian Forest alcoves. These renovations are rejuvenating this much-loved gallery at the ROM, where families return time and time again and memories are etched into the minds of children. It gives the ROM team that supports the Keenan Family Gallery a feeling of great accomplishment.

Beautiful new graphics have added context to the many new and not-so-new specimens in the Great Lakes Marsh and Carolinian Forest alcoves.

Engaging activities such as this thought-provoking puzzle challenge visitors to discover their place in a Great Lakes food web.

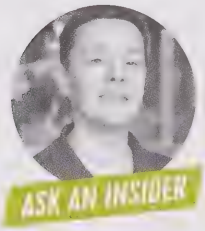
WHAT'S NEW



In the **Carolinian Forest**, check out the feeble-capped russula, a fungus that feeds water and nutrients to the trees in return for sugars. Find the invasive fungus that is causing a disease called "white-nose syndrome" that is killing Canada's bats.

In the **Great Lakes Marsh**, learn how the endangered Lake Erie watersnake is being brought back from the brink because the invasive round goby has provided a new, abundant source of food. Did you know that the sea lamprey is a parasite that latches onto lake trout and other Great Lakes fishes, eventually killing them?

Throughout HoB, **hand-held paddleboards** provide extra details on special plants, animals and fungi, invasive species, and species at risk. From these paddleboards you can learn where different species live and either have a problem or cause one—and what you can do to help.



Claire Watts is the HoB Gallery Coordinator extraordinaire. She has one of the most diverse, complex, and exciting jobs at the ROM. We asked her a few questions about her beloved gallery...

WHAT DO YOU LIKE MOST ABOUT HOB?

It's easy to fall in love with this gallery. I have worked in HoB for nearly a decade and I am still amazed by its impact on visitors. We have an incredibly dedicated and enthusiastic team of 14 staff and more than 100 volunteers. They ensure that visitors have a great experience in the gallery.

WHY DO YOU THINK HOB IS SUCH A POPULAR GALLERY?

It's an incredible place for children and adults to hang out. Where else can someone touch a bear skull or come face to face with a live tarantula? Visitors learn something new every time they come, and their knowledge of biodiversity and the world around them expands. Plus, all the fun hands-on activities and the engaging team in the gallery make it a hive of activity—it's more than looking in a case and reading a label, it's about discovery, conversation, and fun.

You'd be mistaken to think the gallery is aimed only at children. During Friday Night Live, our adult audience loves trying on the bat or bird costumes, holding a Madagascar cockroach, or sneaking a secret kiss in the fox den.

WHAT IS YOUR FAVOURITE SPECIMEN IN THE GALLERY?

There are over 1,000 fantastic specimens in the gallery, so it is almost impossible to choose just one. But, if I had to, it would be the wolf—it's my favourite animal. It takes pride of place in the centre of the gallery with four other Canadian icons.

Visitors are always surprised to find that if you look closely, the wolf changes colour! Secret fact: to help in our war against pesky insects, we actually have two wolves that we rotate; each spends one month in the gallery, the next in the freezer to kill any eggs laid by pests. ◘

Blue Whale Research

SCIENTIFIC STUDY AND PRESERVATION CONTINUE FOR THE ROM'S BLUE WHALE

JACQUELINE MILLER

Title
MAMMALOGY TECHNICIAN

Career Highlight
RESEARCH INVOLVING THE SMALLEST TO THE LARGEST MAMMALIAN SPECIES

ABOVE: A beached blue whale at Rocky Harbour, Newfoundland and Labrador.

The blue whale is the largest animal known to have ever lived. What are the advantages to being so large? What are the disadvantages?
There are advantages to being large, especially when "large" involves specific body shapes and construction. The blue whale is not only large but also fusiform, or "torpedo-shaped." While this shape facilitates movement, a uniform and relatively reduced surface area also allows for economy in heat regulation and a minimizing of heat loss. Although whales have a relatively high metabolic rate compared with terrestrial mammals of equivalent size, their large size allows for an economy of caloric requirement: big organisms actually need less to fuel their overall metabolic needs than a comparable mass of small organisms.

Big is also an advantage when considering potential predators. Although sharks and killer whales might be a threat to newborn blue whales, there are simply no natural predators large enough to effectively hunt an adult blue whale with any efficiency.

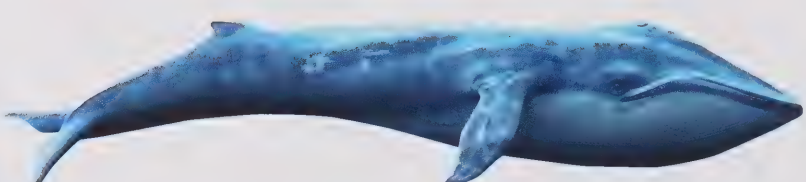
For the blue whale, there aren't many disadvantages to being large except finding enough food in one spot! Being extremely large might limit accessibility to shallower habitats. Also, being large in the wrong temperatures can lead to overheating. This is a problem for whales, dolphins, and porpoises that get stranded.

About how long has the blue whale been around?
A long time! This is a question science is still working on. New data is pushing toward older dates for important events in the evolutionary history of whales. Cutting-edge "total evidence" analyses now date an early adaptive radiation of both toothed and baleen whale to as early as 39 million years ago. The family to which the blue whale belongs may have evolved as early as 23 to 25 million years ago, and with this came a shift to a bulk filter-feeding.

Do we have any idea how large the blue whale population was before the advent of commercial whaling?
The historical population of the blue whale has been estimated at somewhere between 300,000 and 350,000. Between 1909 and 1965, the reported kill of the blue whales in the Antarctic alone (where commercial whaling was concentrated) was 328,177. By 1966 this number had increased to an estimated 346,000 blue whales killed. When commercial whaling of the blue whale was finally banned, it was estimated they had suffered up to a 99 percent population loss. Present estimates are between 5,000 and 10,000 in the Southern Hemisphere, and between 3,000 and 4,000 in the Northern Hemisphere. Of this, the North Atlantic population represents a tiny fragment.

WHAT IS THE BLUE WHALE RECOVERY PROJECT?

In April 2014, a 23-metre-long female blue whale washed ashore in the small community of Trout River, Newfoundland. The ROM was granted permission to retrieve the whale for scientific purposes. The skeleton was shipped to Trenton, Ontario, where cleaning is being completed. In addition, DNA is being analyzed in the Laboratory of Molecular Systematics at the ROM, potentially yielding a treasure trove of evolutionary information for studying these whales, and providing other useful information to help support the conservation of this magnificent, endangered species. This project is generously supported by Nita and Donald Reed and Jean M. Reed.



Just how big is the blue whale that washed ashore in Trout River, Newfoundland?

23.3 metres (that's about the length of an 18-wheeler transport truck)

What effects has commercial whaling had on the whales themselves? With moose, we have seen that a century of hunting the largest bucks (size-selective harvesting) has reduced the size of individuals by removing the larger specimens from the gene pool. Have scientists noticed similar changes in blue whales?

That's really hard to say since so many whales perished in such a short span of time. For "trophy" animals (such as bear, moose, and elk), which have a long history of being hunted, targeting the largest animals has led to some species becoming smaller on average. The smaller animals, less impressive as trophies, are more likely to be passed over, and hence may pass on genes contributing to smaller size. We do have data for diminishing average length of whales caught in the Antarctic from 1933 to 1963, and there was a definite trend to smaller whales being taken. Size alone was the biggest factor determining the relative commercial value of a whale: the bigger the whale, the greater the profit. This trend toward smaller captures at the end of the commercial whaling era was demonstrated in all of the big rorqual species. The period of time in which this occurred, however, was short. It is more probable that fewer of the oldest animals remained, leaving only smaller, younger individuals.

This was definitely a problem during the whaling heyday as there was a period where several large species could be legally caught (based on length regulations) before many would have obtained their optimum reproductive potential. It was through research and a better understanding of whale biology that this critical problem was identified.

Looking across the large expanse of evolutionary time has led some researchers to suggest a trend to larger size for marine mammals.

What parts of a blue whale does the ROM have in its collection?

Since the skeleton and the heart are still under preparation, we actually have only some tissue samples and bone core samples in the Museum. We will have the complete skeleton, a complete plastinated heart, and most of the baleen for the upcoming exhibition. We also have a rib or partial rib in our collection that originally came to us from the University of Toronto.

What is the largest organ of a blue whale?

Many folks think the heart is the largest organ. However, the size of the heart is dwarfed by the liver, the total length and volume of the intestines, and even the tongue. The tongue alone weighs as much as if not more than an elephant!

You recently shipped off the heart from the recovered whale for plastination. Could you tell us about the process?

The process of plastination is rather complex. There are several stages, each vitally important to the outcome of the specimen. Many factors are affected by the size, dimensions, and density of your specimen also. For instance, hollow organs like the heart require a special approach, so that they are not preserved as flat or poorly defined. In general there are four stages: preservation, dehydration, impregnation, and curing.

Preservation involves the fixation of a specimen in formalin (a dilute formaldehyde). The goal is to "fix" a specimen in as close to its anatomically correct conformation as possible. You've likely seen through the ROM's social media some of the images of our work during this stage with the heart, and our attempts to "reinflate" it.

After the specimen is fixed it undergoes chemical dehydration. All the water in the tissue is drawn off with either an alcohol or an acetone. Once the specimen is completely dehydrated, the specimen undergoes "impregnation" with a polymer, usually silicone, which displaces the dehydration chemicals. This process is complex and involves a balance of vacuum, temperature, and time. The specimen is then "cured" so that the polymer hardens. The result is an anatomical specimen that will last hundreds if not thousands of years, which preserves exquisite anatomical detail, often right down to the microscopic level. It is the process adopted by the Bodyworlds folks, who, incidentally, are assisting us with our blue whale's heart.

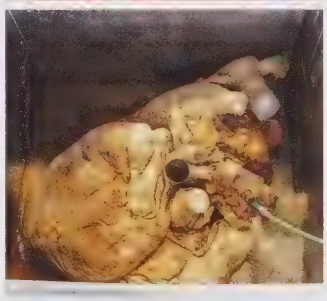
What do you like most about this project?

I enjoyed learning new things about the blue whale's biology the most. Since my background academically was the study of vocal behaviour in mammals, I really wish we could have the opportunity to record the blue whales off Newfoundland and Nova Scotia ourselves. That would be phenomenal! However, being the lead of the team responsible for the preservation of the heart was a fantastic, once-in-a-lifetime experience. I don't think much could top that.

What do you dislike the most about it?

Nothing! OK, that is not entirely true. I disliked how my hair smelled after a day on site, or after a day working with the heart. The odour would really persist. I ended up obtaining a robust supply of motel-room shower caps while in Newfoundland! ◘

Jacqueline Miller holding up the central element of the hyoid apparatus of the whale. This bone provides attachment for the muscles of the tongue and the floor of the mouth.

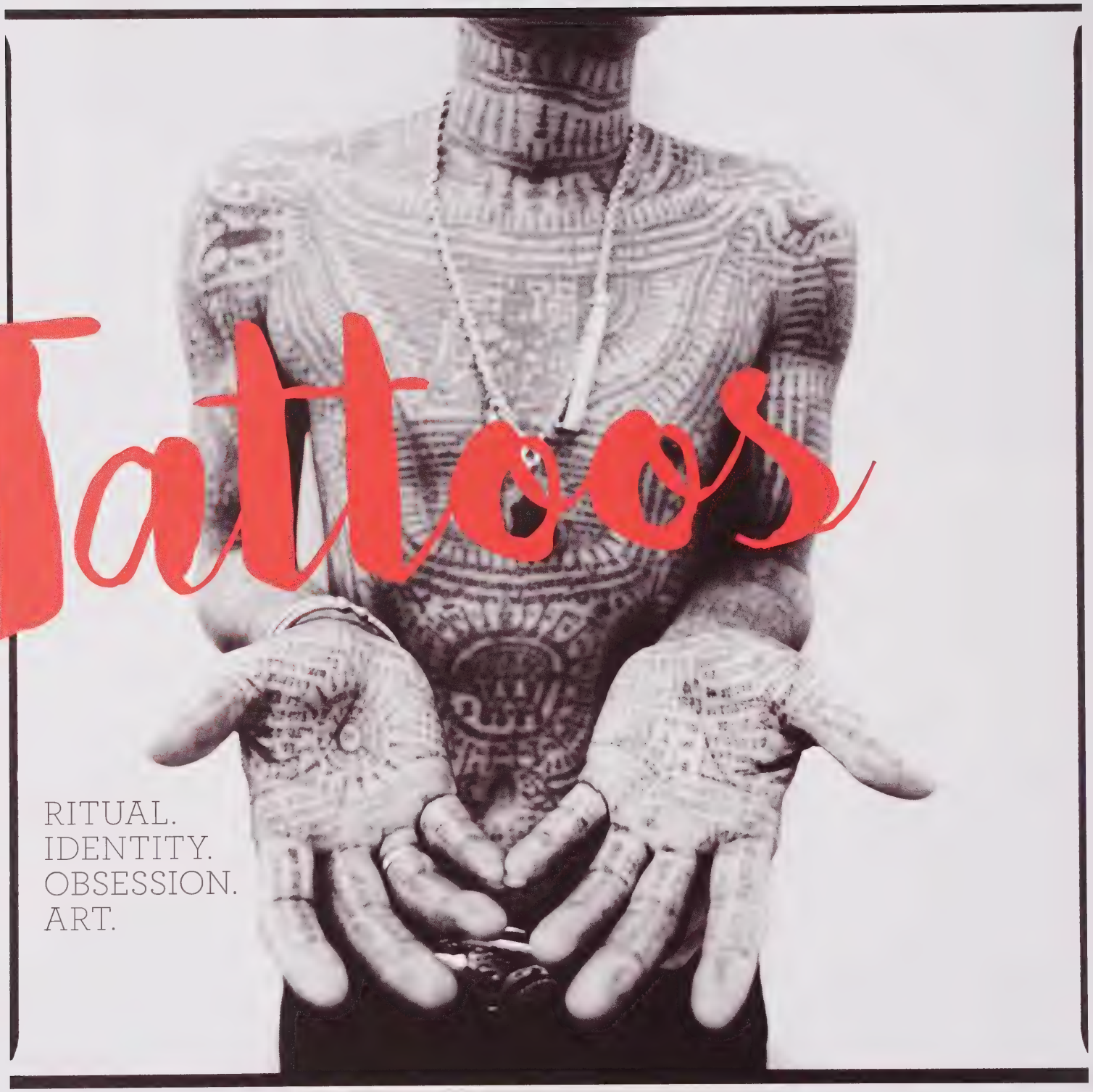


The formalin-fixed heart with various containers used as "corks" to allow the heart to be partially inflated with instilled formalin, helping to preserve the heart's overall shape.

FIND OUT MORE

You can help scientists understand and monitor blue whales and other cetaceans on Canada's east coast. Send your whale-watching photos to to the ROM and Dr. Jack Lawson at the Department of Fisheries and Oceans via Twitter: **@ROMtoronto** and **@DrJWLawson**.

Whale illustration by Frank Sennholz. Soulpix. Photos by Stacey Lee Kerr and Jacqueline Miller.



Exploring tattoo cultures around the world

EXCLUSIVE
EXHIBITION PREVIEWS
FOR MEMBERS
APRIL 1 & 2

One in five Canadians has at least one tattoo, including Prime Minister Justin Trudeau, who sports a Haida symbol on his left shoulder. Tattoos have moved into the mainstream. Companies have begun to relax rules on visible tattoos in the workplace. As the tattoo industry is growing, so is the tattoo-removal industry. This new exhibition charts the journey of tattooing from its deep historical and global roots, via its marginalization, to its current revival in many cultures around the world.

The world's oldest tattoos, directly observed on the preserved skin, are sported by Ötzi, the Iceman, who perished in the Italian-Austrian Alps circa 3250 BC. Archaeological and historical evidence has shown that tattooing was a widespread phenomenon, present on every inhabited continent from prehistory to the present. Tattoos could reflect status, identity, or group affiliation, or be cosmologically significant.

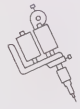
Along with other factors, the spread of Christianity helped sever links between indigenous people and their tattooing traditions by the imposition of a different value system. In indigenous societies, tattooing was either suppressed, forgotten, or pushed to the margins. Tattoos became associated primarily with prisoners, prostitutes, soldiers, and gang members. But today tattooing has made a comeback as an emblem of choice and as an expression of one's identity in an ever more globalized world. It has acquired the status of an art form: tattooing has gravitated from the margins to the mainstream.

The ROM is proud to present *Tattoos*, the North American premiere of the exhibition *Tatoueurs, tatoués*, originally from the musée du quai Branly in Paris, curated by Anne & Julien, creators of the art magazine *HEY! Modern Art & Pop Culture*, and supported by the world-famous tattoo artist Tin-Tin as artistic consultant. The exhibition showcases almost 200 loans from the Musée du quai Branly, other museums, and private lenders in Europe, and is augmented by more than a dozen objects from the ROM's Arctic, Egyptian, Pacific, and East Asian collections. In addition to posters, prints, paintings, photographs, figurines, tattooing needles, machines, and other tools, the exhibition also features 13 realistic silicone body parts tattooed by some of the world's leading tattoo artists. These artists include Tin-Tin (France), Horiyoshi III (Japan), Filip Leu (Switzerland), Paul Booth (USA), Xed LeHead (UK), Chimé (Polynesia), and Montreal's Yann Black. –SASCHA PRIEWE

glossary

Six essential tattoo terms to know

COVER-UP
A new tattoo designed to obscure or cover an old tattoo by integrating the old design into the new design.



AFTERCARE
An important post-tattoo step of cleaning and protecting to ensure the skin heals properly and the tattoo appears as designed.

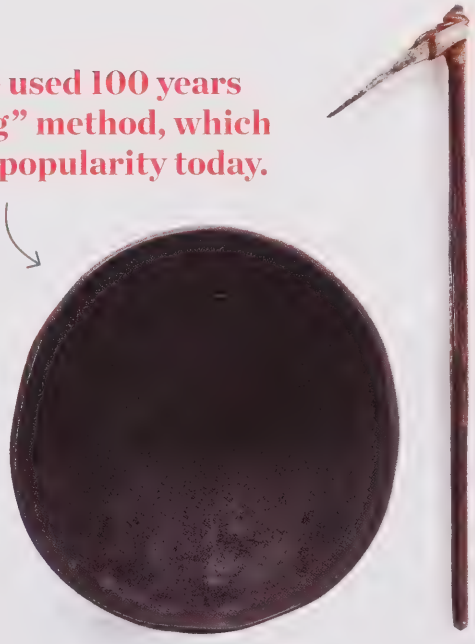
FLASH
Pre-designed images that can be purchased by tattoo artists or clients as templates for tattoos.

SLEEVE
Typically a tattoo that runs down a person's arm from shoulder to wrist.

TEBORI
An ancient form of tattooing where the skin is carved and ink deposited without using a tattoo machine.

STICK AND POKE
A tattoo method where a single needle is dipped in ink and inserted under the skin until the design is complete.

This bowl and stick were used 100 years ago as part of the "poking" method, which is experiencing renewed popularity today.



OPPOSITE:
Untitled 2, Tattoo details of a man's hands, arms and chest. Cédric Arnold. Bangkok, Thailand 2008–2011

RIGHT:
Tattooing kit, Rennell Island, Salomon, Melanesia. Early 20th century
Musée du quai Branly, Paris
Inv. 71.1961.103.85.1-2

Untitled 2, Cédric Arnold, courtesy Galerie Olivier Waltman. Tattooing kit, musée du quai Branly, photo Claude Germain.

TATTOOS

Arctic

When Captain George Francis Lyon crouched down and crawled through the entranceway into the dim interior of an Inuit igloo in February 1822, he was unaware that the facial and arm tattoos displayed on the women there were, in part, symbols of their status. The domestic scene before him showed food cooking in stone pots heated over oil lamps. Drying racks, a skin pail, an ulu (semi-circular knife), and a woman tending to an infant represented the women's realm—their tattoos indicated that they had learned the necessary skills to be wives and mothers. To be tattooed was a rite of passage, a pain endured to mark a stage of life, accomplishments, and relationship with the spiritual realm.

In a widespread creation story, sea mammals were formed from the severed finger digits of the Mother of the Sea Beasts (known by various names, such as Sedna, Nuliajuk, and Taliilajuq). She was pleased by the women's tattoos and it is thought that the tattooed lines across a woman's finger joints honoured the Goddess and the animals she controlled. However, a young girl's menses displeased the animal spirits, making puberty a dangerous time for the Inuit family. Tattoos appeased the animals though, and with this homage, tattoos symbolized purification.

Designs representing personal accomplishment, protection, power, identity, and spiritual connection define tattoo symbolism across the Arctic. Also, tattoos were a visible record of tradition. A tradition, though, that faded with the coming of the missionary, modern medicine, and contemporary practices. But Inuit elders across the Arctic still remember, and they are now the source of traditional knowledge for younger generations inspired to revive the tattoo tradition. For many in the contemporary Inuit world, markings on skin honour the ancestors and bolster identity.

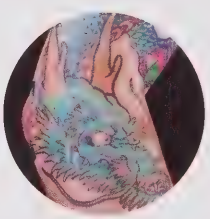
–KENNETH R. LISTER

Interior of an Eskimo Snow-Hut, Winter Island, 1822
Drawn by Captain G. F. Lyon and engraved by Edward Finden.

For many in the contemporary Inuit world, markings on skin honour the ancestors and bolster identity.

7 seven common styles

The basics about contemporary tattoo styles...



JAPANESE

Often derived from watercolour inspired artwork, as well as word and phrase tattoos.

NEW SCHOOL

Wild, comic book style, featuring imagined worlds and vivid colour.

TRIBAL

Derived from ancient tribal art, usually solid black, somewhat random compilation of lines and curves.

TATTOOS

Japan

Toyota Hokkei (1780-1850), Rochishin from *The Water Margin*

In the minds of average Japanese people today, tattoos have a strong association with criminality, especially with the yakuza, or Japanese mafia. This is why individuals with tattoos are prohibited from entering many swimming pools, hot springs, and sports. This negative social perception toward tattoos, however, is a relatively recent phenomenon. In fact, Japan has a long history of appreciating tattoos, with roots, some suggest, in the Neolithic Jōmon period (circa 10,500–300 BC).

The most important time in the development of tattoos in Japan was the Edo period, which lasted from 1603 to 1868. The period is characterized by the pleasure-seeking culture of the "floating world," especially entertainment at brothels and the kabuki theatre in the urban towns of Edo (today's Tokyo), Kyoto, and Osaka. Kabuki theatre was instrumental in popularizing tattoos: The plays often featured tattooed characters, who were then portrayed in woodblock prints, or ukiyo-e. In Edo Japan, tattoos were especially associated with the tale of The Water Margin (J: Suikoden), a story about 108 Chinese outcasts and heroes who had extensive tattoos. Tattoos were customarily worn by working class people. Tattoos also played an essential part in the lives of Japan's indigenous population in Hokkaido and Okinawa, especially those of women.

In the context of Japan's radical Westernization and industrialization of the late nineteenth century, tattoos came to be considered barbaric and undesirable by Japanese officials. Tattoos were subsequently legally banned until 1948, which had devastating effects on Japan's indigenous cultures and forced the tattoo culture underground. In preparation for the 2020 Tokyo Olympics in particular, and in the context of Japan's effort to globalize the country in general, there is currently a public debate about whether Japanese people should rethink their predominantly negative attitude toward tattoos. –ASATO IKEDA

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→

AMERICAN TRADITIONAL

Military themed, eagles, flags, pin-up girls, and such, these tattoos offer basic designs and colour.

BLACK AND GREY

These tattoos rely on shading and variation in tone and colour. Often depicting portrait style images, they have their roots in street culture.

PORTRAIT

A realistic image of a person's face, based on a detailed photograph. Designs often portray a beloved relative or celebrity.

DOTWORK

These tattoos are created using only tiny dots of ink in place of shaded colour. Often geometric in design.

famously inked

Bet you didn't realize these historic figures had tattoos...

JUSTIN TRUDEAU
Canada's 23rd Prime Minister, Trudeau has a tattoo of the Earth inside a Haida raven on his left shoulder. According to Trudeau, "The globe tattoo I got when I was 23; I added the Robert Davidson raven for my 40th birthday."

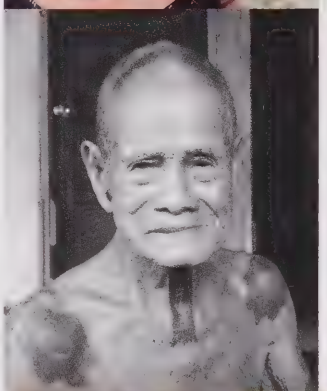
WINSTON CHURCHILL
Prime Minister of the United Kingdom from 1940–1945 and again from 1951–1955, Churchill had an anchor tattoo on his arm. In addition, his mother Jennie had a snake tattooed on her wrist!

DOROTHY PARKER
A writer, poet, feminist, and critic, Parker had a small star tattoo on the inside of her arm. She inspired the book, *Dorothy Parker's Elbow: Tattoos on Writers, Writers on Tattoos.*

TEDDY ROOSEVELT
The 26th President of the United States (1901–1909), Theodore Roosevelt reportedly had a tattoo of his family crest emblazoned in the centre of his chest.

TATTOOS

Borneo



TOP: Heavily tattooed Iban, at the Gawai harvest festival in the Nanga Delok longhouse, June 2013.

CENTRE: Mujap, an Iban elder, at Nanga Beretik longhouse, May 2015. His tattoos include the rosettes on his shoulders (bunga terong) or eggplant flowers and a throat tattoo (ukir rekong), or brahminy kite, which was thought to protect the neck from head hunters.

BOTTOM: Penan porters supporting ROM biodiversity survey project at Gunung Mulu National Park, May 2013.

The ROM is guided by a dual mandate, "The Arts of Man Through all the Years" and "The Record of Nature Through Countless Ages." Many major museums were similarly comprehensive when established because they were broadly interested in all manifestations of the natural world, including human cultures. These museums were built by true explorers who spent time working and living in their regions of interest. Permanent skin markings fascinated these explorers. The modern word "tattoo" derives from the Polynesian *tatau* and was introduced to Europe by explorers during the Age of Discovery, reaching a wider audience as a result of Captain Cook's first voyage to the Pacific in 1768.

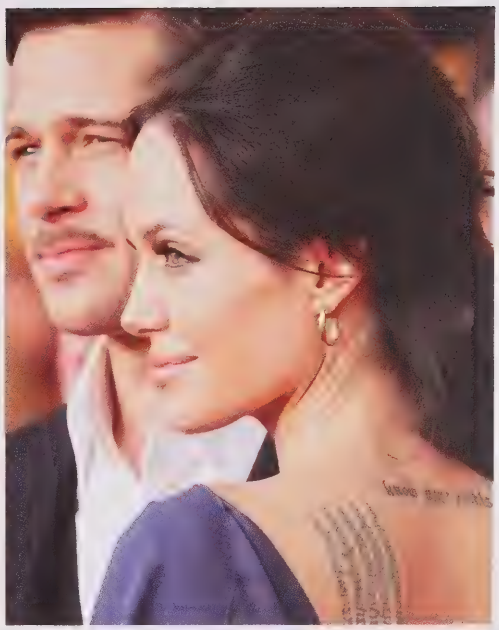
Borneo seems to have attracted more than its share of polymaths, perhaps because of the extraordinary biological and cultural diversity on the world's third largest island. Their eclectic studies were encouraged by the Sarawak Museum in Kuching. Established in 1888, former curators were described as "zoologist and ethnographer," "zoologist and archaeologist," or "ornithologist, explorer, archaeologist, and anthropologist." Trained as naturalists and biologists, their fieldwork in Borneo was dependent on the support and cooperation of the Dayak communities. Living among the people, they were able to observe and record all aspects of life in Borneo. They too were captivated by the tattooing traditions which had flourished in splendid isolation for millennia.

The modern word "tattoo" derives from the Polynesian *tatau* and was introduced to Europe by explorers during the Age of Discovery.

The seminal work on tattooing in Borneo was the result of a collaboration between Charles Hose, an enlightened British colonial administrator who was a zoologist and ethnologist, and Robert Shelford, an entomologist working as the curator of the Sarawak Museum. Together they catalogued the tattoo motifs in Borneo circa 1900, before the arrival of western influences.

ROM biologists conducting fieldwork in Borneo today are fortunate to experience the diverse and vibrant tattoo traditions. Many of our guides, porters, and assistants are tattooed, and come from communities with complex tattoo traditions. Borneo's tattoo motifs are not static, but are constantly changing as young people move to the cities, returning with new interpretations of traditional motifs with western-inspired designs.

After working in Borneo for over 25 years, like the earlier explorers, tattoos have also got under my skin! **–CHRIS DARLING**



LEFT: Artoria Gibbons, star of the sideshow. MIDDLE: Toronto model Jerry Melo. RIGHT: The tattoos of actor Angelina Jolie. The tattoo between her shoulder blades is in Gothic letters and reads 'know your rights'.

TATTOOS

Today...

Although tattooing has deep roots across cultures and has spread globally, across several millennia, the Western perception of tattoos, the tattooist, and the tattooed has had connotations of deviance.

The invention of the mechanical tattoo machine during the late 19th century in the United States, cross-cultural sharing between American, Japanese, and European tattoo artists, and changing social mores amongst youth and the middle-class, which began with 1960s counterculture, have served to change the perception of tattooing in contemporary society. Today, tattoos are ubiquitous: seen on the street, used in luxury fashion brand advertising, and themes of popular reality television shows.

It is interesting to note that although tattoo shops operated in New York in the late 19th century, tattooing was illegal in the city until 1997. The history of tattooing in Canada has closely mirrored that of the United States. Over the past 45 years, the acceptance of tattoos has evolved with the proliferation of tattooers who have formal art training; academic research and writing about tattoo culture; books and magazines about tattoos; and exhibitions in museums around the world. Further, according to Clinton R. Sanders, writing in *Customizing the Body: The Art and Culture of Tattooing*, "the fact that admired public figures such as celebrities and athletes [are] tattooed [gives] tattooing a certain popular cultural cachet." All have helped to change what was once perceived as deviant and taboo into an accepted practice in mainstream popular culture.

The contemporary tattoo artist may work in a variety of media in preparation for the final creation of a tattoo. They might make drawings on paper, watercolours, or paintings. They also exhibit their work in galleries and create unique, custom work for their clients with whom they enter into a collaborative relationship. Writing about the art of tattooing in *Artforum* in 1981, Marcia Tucker, former Director of the New Museum, stated, "Tattooing is finally, once again, coming into its own as another aspect of the fine arts. A new form of populism is emerging in the arts, a sense that artists no longer wish to address themselves and their work exclusively to each other and to a small, informed audience. Rather, there is an increasing desire to work outside traditional media, to address a non-art public and to situate the work itself in a context larger than previously thought possible."

—ANN WEBB ◘

HOW TO SEE IT

Tattoos opens **April 2** and runs until September 5, 2016.

Exclusive previews for Members:
April 1, 10 a.m. to 6 p.m. | **April 2**, 10 a.m. to 12 p.m.

Visit **rom.on.ca/tattoos** for information.

Exhibition in partnership with

★ MUSÉE DU **QUAI BRANLY**
là où dialoguent les cultures

This exhibition was developed and produced by the musée du quai Branly.

GALLERY PREVIEW

For a sneak peek at what the Museum is planning, visit the Dawn of Life preview gallery now open at the ROM.

discovering earth's first life

The ROM's new gallery in development will showcase spectacular fossils from the time before dinosaurs

By SARA SCHARF

Cédric Aria (right) and Arvid Aase (left) at the 508-million-year-old Marble Canyon fossil site, in Kootenay National Park, British Columbia.

The Dawn of Life Gallery at the ROM will be a tour through time and the history of life, allowing visitors to see how each of the early environments looked and how the animals in each period lived, moved and interacted with each other.

From the strange predators in the earliest underwater communities, to jawless fish and sea scorpions hunting in the first reefs, to reptiles and insects creeping and flying through the first forests, most of these creatures lived long before the age of dinosaurs, which actually came along fairly recently in Earth's history.

The gallery starts with the first signs of life, 3.5 billion years ago, when bacteria in the oceans began to alter the atmosphere by giving off oxygen as the waste product of photosynthesis.

Though bacteria formed mats, each individual was just a single cell. Bacterial communities weren't organized—they were just blobs or clusters of cells that happened to be at the same place at the same time. The big step was the evolution of multicellular life. →

ONE BILLION YEARS AGO

Multicellular life probably first appeared more than a billion years ago. The fossils from Mistaken Point, Newfoundland and Labrador, from the **Ediacaran Period (635 to 541 million years ago)** demonstrate some of the diverse shapes that multicellular organisms later developed. It is amazing that they were preserved as fossils at all because their bodies were soft. We think that at least some of them were animals, though they don't look like any animals now alive: some might instead have been kinds of organisms that no longer exist. Some of these creatures are shaped like fern leaves (e.g., *Fractofusus*), others like ridged round pillows. Some have unique threefold symmetry not seen anytime since. Most of them did not appear to be able to move. Instead, these creatures seemed to have been either anchored to one spot or laid on the ground. They may have eaten bacteria, but no evidence to date shows that they hunted.

The first known mobile predators evolved during the **Cambrian Period (541 to 485 million years ago)**. The threat of being eaten – predation pressure – probably contributed to what is known as the "Cambrian explosion" of evolutionary diversity. Suddenly, at least in geological terms, there were many more organisms with bilateral symmetry. Bilateral symmetry is important in evolutionary terms because being identical from side to side tends to then lead to a differentiation of the front and back of an animal. With a front and back, an animal can move faster in one particular direction than in others. And when there's a front that meets the world first, organs that sense the world, such as receptors for smells and light, tend to cluster there. In other words, animals start to get faces.

+

Ediacaran Period

Fractofusus

Mistaken Point, Newfoundland

The ROM has an exceptional collection of primitive animals with bilateral symmetry from the Burgess Shale in British Columbia, from around 508 million years ago.

FACES, EYES, AND FINS

When the animals from the Burgess Shale were alive, the oceans were teeming with living things. Many belonged to groups that we recognize from their living descendants today. Just like they do now, sponges sat on the bottom and filter-fed, squid-like animals jetted through the water column, and various kinds of worms and arthropods dug tunnels in the sediment or crawled on the sea floor. The only known Burgess Shale fish, *Metaspriggina*, had eyes to let it see where it was going, but so did early shrimp-, spider-, and insect-like animals, such as trilobites and *Anomalocaris*, which looked for food and mates with compound eyes. Though there is no animal alive today resembling *Anomalocaris*, it was clearly a top predator. Most Burgess Shale animals were relatively small— only tens of centimetres long at most— but *Anomalocaris* could reach lengths of up to one metre. *Waptia*, a shrimp-like crustacean from the Burgess Shale, showed evidence of a response to predation pressure we often take for granted in animals today: mother *Waptia* protected their eggs, as shown in a stunning fossil on display in the Dawn of Life Preview Gallery.

Animals from the Burgess Shale are famous because they are so well-preserved, and this high degree of preservation is remarkable because so many of them were soft-bodied. *Wiwaxia*, for instance, is a spiny-backed mollusc that grazed on algae, just like modern snails often do, and *Hallucigenia* is related to velvet worms, again,

dawn of life timeline

Dunkleosteus

FORMATION OF EARTH
4.6 billion years ago

First signs of life

MISTAKEN POINT, NFLD.
635 to 541 million years ago
Ediacaran

BURGESS SHALE, B.C.
541-485 million years ago
Cambrian

485 to 444 million years ago
Ordovician

444 to 419 million years ago
Silurian

MIGUASHA, QUEBEC
419 to 359 million years ago
Devonian

Anomalocaris

Cambrian Period

very much like its forest-dwelling modern relatives aside from the defensive rows of spikes along its back. In fact, over time, animals that had evolved not just defensive spines but shield-like armour or shells became more and more common: they were more difficult to kill than their softer relatives. Stiffer structures on the insides of some animals, such as cartilaginous skeletons inside early fishes, provided enough support to allow them to grow to be too big to swallow. By the Ordovician Period, many different kinds of animals had developed durable exteriors.

TEEMING SEAS

The **Ordovician (485 to 444 million years ago)** was a scary time to be a soft or small animal: the oceans swarmed with hunters targeting prey of all sizes, from tiny plankton, eaten by slightly bigger plankton and filter feeders, including crinoids (relatives of starfish that look like skeletal flowers), all the way up to large squid-like cephalopods with sturdy shells and rigid beaks. Bivalved molluscs with resistant shells became abundant. Fishes with armoured exteriors good for stymieing beak attacks are also characteristic of the Ordovician, but these fishes were very different from modern fishes because, though they are fish-like in shape, they do not have jaws. Instead their mouths were fleshy: they could suck in food, but could not bite.

METASPRIGGINA RECONSTRUCTION

Fishes really came into their own in the **Silurian (444 to 419 million years ago)**, though, when jaws first developed out of cartilaginous gill arches. Fishes could now bite, and bite they did. The fishy arms race that took off with the first jaws resulted, by the **Devonian (419 to 359 million years ago)**, in a high diversity of fishes. One place that demonstrates this well is Miguasha, a 360 million year old UNESCO Natural World Heritage Site in Quebec.

JOGGINS, N.S.

359 to 299 million years ago — **Carboniferous**

299 to 252 million years ago — **Permian**

252 to 201 million years ago — **Triassic**

First dinosaurs

201 to 145 million years ago — **Jurassic**

145 to 66 million years ago — **Cretaceous**

66 to 23 million years ago — **Paleogene**

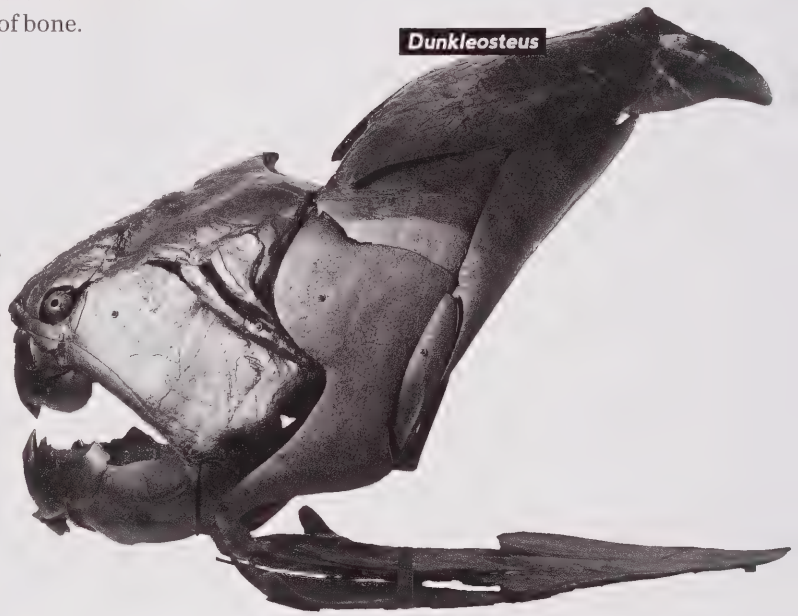
23 to 2.58 million years ago — **Neogene**

Today

First mammals

Miguasha has a remarkable diversity and abundance of amazing fish fossils. The top predator in the seas of the Devonian was *Dunkleosteus*, a true monster fish up to 10 metres long and weighing nearly four tonnes—mostly because of the weight of the massive bones protecting its head. Take a look at *Dunkleosteus*'s jaw, though, and it's obviously quite different from modern fishes: it does not have teeth. Instead of teeth, it chomped down on its prey using sharpened projections of bone.

Devonian Period



LIFE-SIZED CAST OF A SKULL FROM A 2-METRE-LONG DUNKLEOSTEUS *FOSSIL*

THE FIRST AMPHIBIANS

Other Devonian fishes pursued a different strategy for staying alive, by spending their time in shallow water and swampy areas where large predators were less likely to go. Some of these fishes developed sturdy fins to push themselves around in these environments and even onto dry land. These fishes became the first animals with backbones to have limbs. *Tiktaalik* was one such fossil fish with limbs from 375 million years ago. It lived in a tropical forest criss-crossed by streams, though its remains were found in an area no longer known for its warm weather: Ellesmere Island, in Nunavut.

Life on land in the **Carboniferous (359 to 299 million years ago)** and **Permian (299 to 252 million years ago)** periods became more and more recognizable. Warm temperatures helped the abundant land plants produce large quantities of oxygen as they photosynthesized, enriching the air. Insects thrived in these conditions, diversified, grew large, and began to fly: giant dragonflies with wingspans of nearly a metre whizzed through the forests. Meanwhile, amphibians and reptiles took advantage of the rich pickings. *Dimetrodon*, a carnivorous animal with an imposing sail along its spine, ambled along flood plains, eating vertebrates as well as insects and other arthropods. Reptiles capable of laying eggs on land—such as *Hylonomus*, the first known reptile, found in Joggins, Nova Scotia—were able to colonize drier areas. Teeth from amphibians, early synapsids (a group including mammals and their ancestors), and

Permian Period

BE A PART OF THIS STORY!

Never before has such an exciting new gallery project presented itself at the ROM—this is the story of life on Earth. It's a tale that is as equally wondrous as it is compelling, as distinctively Canadian as it is globally significant, one of which the ROM is immensely proud to share with the world. But we can't do it without you! To learn more about the future Dawn of Life Gallery, or to make a donation, please visit **rom.on.ca/dawnoflife** or call **416.586.5660.**

READ ON! Check out what *The Walrus* magazine wrote about this story at **thewalrus.ca/even-cooler-than-dinosaurs**

reptiles of this period show that more and more of them developed the ability to eat plants, allowing them to exploit a plentiful source of food that could not run away. The relationships between animals and plants also became more complex: early beetles began to eat plants' reproductive parts, and on their trips from plant to plant began to act as pollinators—a relationship that continues today in plant lineages from the time, such as cycads.

THE LARGEST MASS EXTINCTION

One of the reasons we don't have gigantic dragonflies menacing us today is that something—or a series of things—drastically changed life on Earth just at the end of the **Permian**, around **252 million years ago**. The root causes of the biggest extinction event ever to happen are still being debated, but its effects were huge. More than half of the kinds of living things alive in the Permian did not make it into the Triassic. Land plants and animals seem to have survived better than ocean dwellers, more than 90 percent of which died off. Several distinctive lineages that were common before the extinction event disappeared entirely, such as trilobites and spiny sharks in the oceans, and seed ferns on land. These great changes in the populations of living things freed up ecological niches that the survivors came to exploit in the **Triassic Period (252 to 201 million years ago)**.

DAWN OF THE AGE OF REPTILES

Some Triassic reptiles, for instance, returned to life in the water and developed flippers out of what, in their ancestors, had been four limbs adapted to walking on land. Another group of reptiles took to the air: the pterosaurs. Two other very famous groups of vertebrates appeared for the first time during the Triassic as well: both the dinosaurs and the mammals.

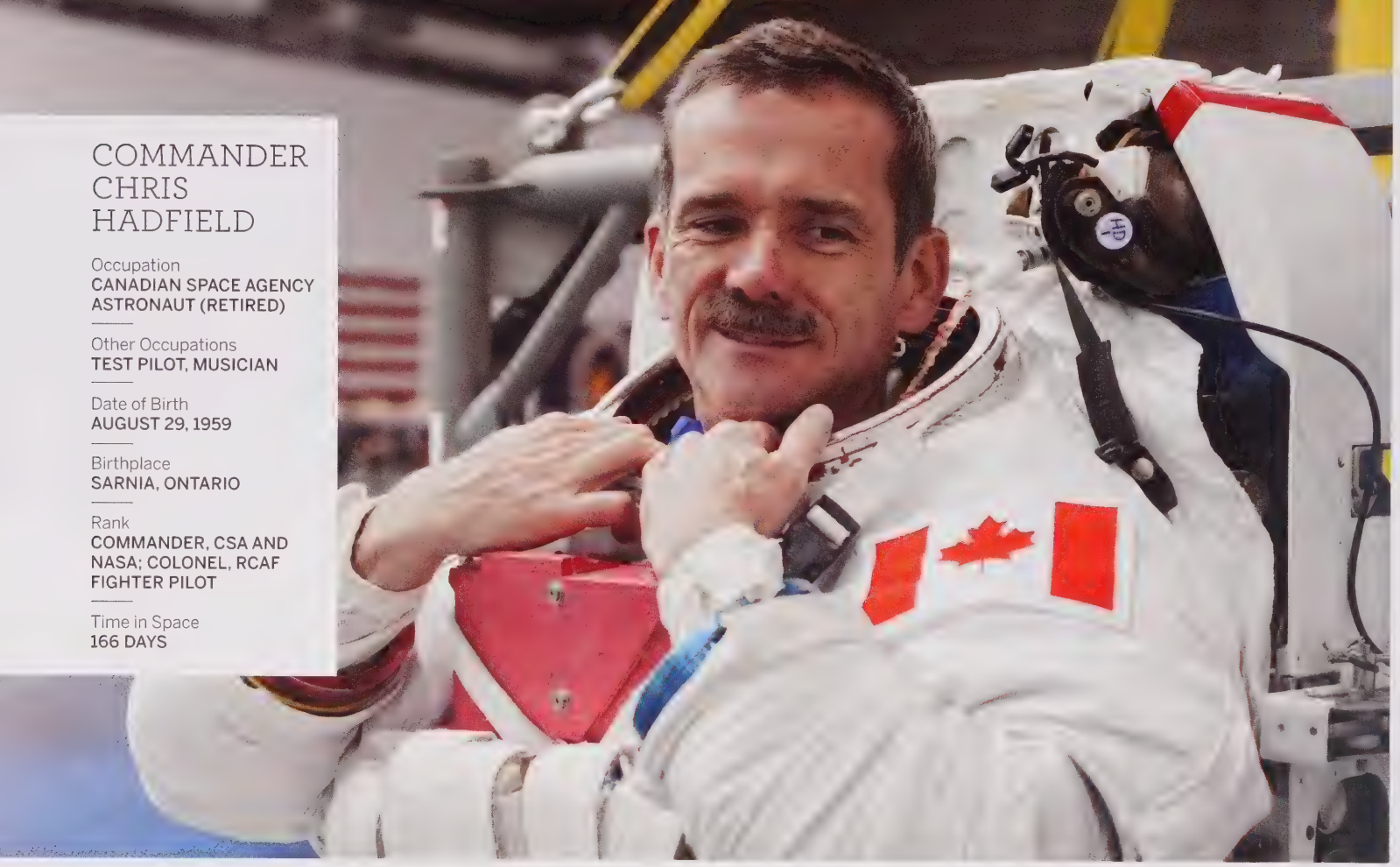
The Dawn of Life Gallery will end here, at the start of the age of dinosaurs. At this point, it will be worth looking back again to marvel at the dramatic changes that life underwent to this point: its appearance as single-celled organisms, the transition to multicellularity, the first recognizable animals, the diversification of animals in the water, and, with the appearance of land plants and fungi, the colonization of land. Turn around, and either take a break or walk straight into the Jurassic in the James and Louise Temerty Galleries of the Age of Dinosaurs, continuing the story of life on Earth.

prehistoric plant life

There are many different types of photosynthetic plankton and larger seaweeds in the ocean today (such as brown algae, which includes kelp, and red algae, which includes nori). There was also a great deal of diversity among algae in the past. As it turns out, though, all land plants evolved from green algae.

The first evidence of land plants is in the form of spore fossils from the Silurian. These spores are the dispersal structures of the ancestors of today's liverworts, mosses, and ferns, all of which have swimming sperm and which therefore need water to reproduce. These plants were not alone on land, either: Silurian fossils show evidence of what were probably fungi, as well as identifiable centipedes and spiders. It has even been suggested that plants would not have been able to colonize the land if fungi were not there to help them extract nutrients from the bare rocks.

By the Devonian, seed plants had evolved. Seed plants make pollen, and so they can reproduce without needing to be near a source of water, allowing them to grow in a wider range of habitats—even the giant horsetails that grew dozens of metres tall in the early Devonian likely needed water for fertilization. The evolution of wood allowed plants to grow taller and taller, and the evolution of leaves allowed them to harvest even more light. By the end of the Devonian, trees were abundant on land, producing the first forests. ◘



COMMANDER CHRIS HADFIELD

Occupation
CANADIAN SPACE AGENCY ASTRONAUT (RETIRED)

Other Occupations
TEST PILOT, MUSICIAN

Date of Birth
AUGUST 29, 1959

Birthplace
SARNIA, ONTARIO

Rank
COMMANDER, CSA AND NASA; COLONEL, RCAF FIGHTER PILOT

Time in Space
166 DAYS

PROFILE

Canada's Astronaut

CHRIS HADFIELD SITS DOWN WITH *ROM* MAGAZINE AND TALKS SPACE, DINOS, AND RISK

We're eager to hear about your favourite objects and places at the ROM, but we don't get to chat with astronauts very often, so we're hoping to ask a few questions about your space travels first...

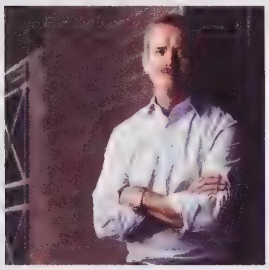
Thinking back to your first space trip, what was scarier, the process of leaving the planet, or returning?
It's not really a question of being scared or not, it's more about risk. It's much riskier leaving, by far. On a six-month space flight, 50 percent of all risk is in the first nine minutes. Launch is extremely dangerous. During my first space shuttle flight, back in November 1995, the odds of dying in the first eight minutes and 42 seconds were one in 38. Terrible odds. If commercial airline flights had those odds, I think they would crash 22 airplanes a day. It's that level of risk. So launch is definitely the riskier part. Neither is scary. But, definitely, launch is riskier.

You recently loaned the ROM a pair of gloves that you wore on a space mission. Can you tell us more about what makes those gloves special?
There are different types of space suits built for different purposes. Some you just wear inside just in case the ship springs a leak, so you want to be wearing a pressure suit, sort of like a high-altitude pilot wears, but it's not a suit that you're going to go outside in. But there are some suits that are built specifically to go outside on space walks. I was Canada's first space walker; I've done that twice. Those gloves are from a Russian suit called an Orlan, which means "sea-eagle."

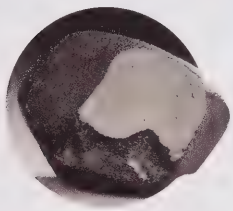
Is there anything particular to using those gloves? Are they ergonomically friendly?
Oh, no, they're ergonomically wicked. They're the best compromise we could come up with, but wearing a space-walking suit is like being inside a balloon. And the balloon is pressurized to about the same pressure as an indoor volleyball. You know, if you grab an indoor volleyball and push on the side of it and feel just how stiff it is, that's how stiff your suit and gloves are when you're in a space-walking suit. So just to close your fist, you're fighting all of the inflated stiffness of the glove, and to bend your elbow or move your waist or your legs, it's a constant resistance exercise workout, like you're on a universal gym the whole time you're out on a space walk. And we've tried to make the gloves as nice as we can, they're a lot better than they used to be, but they're still pretty primitive. But there are a couple of clever design elements. If you look inside that glove, it's got a really nice universal joint around the wrist, so that you can bend your wrist forward and back and left and right. And then there's a pinching bar: it goes around the flesh of your hand, from the back of the hand right into

Photo courtesy of NASA. Museum photo by Roger Yip. Space gloves photo by Marianne Mader.

In 1995, Hadfield rode his first rocket. He flew again in 2001, installing Canadarm2. He also served with NASA's operation in Russia, going on to pilot a Russian Soyuz. He is the first Canadian commander of the International Space Station and a *New York Times* bestselling author.



CHRIS'S MUST-SEE



MARTIAN SHERGOTTITE METEORITE

NISGA'A MORTUARY POLE AT THE ROM

FROM BONES, TO METEORITES, TO MINERALS... I LOVE MUSEUMS AND THE ROM IS WELL-CLASSED.

SPACE GLOVES LOANED TO THE ROM

the palm. We call it a palm bar, and it pinched us really hard when the suit's not pressurized. So when the suit pressurizes, it holds the suit from sort of ballooning into your palm. And then we've tried to make the fingertips as thin as we can, but still safe. So they're still very thick. It's like trying to do car repair wearing hockey gloves.

As an astronaut, are there any places at the ROM that you are particularly drawn to?
The meteorites! They are fascinating to me. They are our chance to explore the solar system without actually going. To actually physically touch and see, lift and look at, and question what we're all made of and where it all came from. The chance to see them, especially pieces of Mars, is such a rare opportunity. The improbability of that existing on Earth at all, and yet to have so many of those pieces at the ROM—to me that's one of the more alluring areas.

Do you recall what inspired your first visit to the ROM?
I went with my school originally. It was a great experience, running around, filling your mind with new ideas, as a visit to a museum should be. That's what's special about a natural history museum. It ought to be a continuous stimulating parade of things that you only really imagined or had never even be able to imagine, and I remember it exactly that way. From old diorama exhibits, to bones, to meteorites, to minerals, I was really fascinated by the huge variety of mineralogical specimens. I love museums and the ROM is well-classed.

If you could bring one special person to visit the ROM, who would it be?
My granddaughter. She's only four months old, but I'd like to move forward in time about four years and bring her to the ROM. She lives in China with my son and his wife, so I haven't met her yet. I'm very much looking forward to it. Of course, I'd like to go with Leonardo da Vinci. I would love to go with Galileo, and I would be the student. But I would really love to go with my granddaughter. Just because of the chance it would give us to talk about things.

Is there a favourite object in the Museum that stands out to you as something you would like to have in your own home?
I'd like to have a dinosaur. A full dinosaur skeleton, that's what I'd like to have. I'd just love to have one in my living room so that when I'm sitting watching TV, I'm under the belly bones of an *Allosaurus*. The link to me would be fascinating and so bizarre. I mean, it could stick through two floors of my house. It would be really different.

What advice would you give to someone who has never visited the ROM before?
I think it depends. If you're a kid, I would say, just go, and look, and do your homework afterwards. But as an adult, I would actually say, go to the website and look through it, and think about what it is you want to go see. Do a little research in advance, because I think you get more out of it that way. If you just wander around, after a while it can sort of bounce off you, and you might miss something at the core of your interest. It's sort of like going to the Louvre, or going to any of the big multifaceted museums, like the Hermitage in Saint Petersburg. If you just walk in cold, you're just going to be numb, mentally numb, because you're overwhelmed by the variety. And so I think it's better to not try and see a whole museum in a day, but to go and see specific galleries and collections, and then spend time thinking about them. ◘

ROMTRAVEL

TRAVEL FEBRUARY 13 TO MARCH 2, 2017

NORTHERN INDIA

Explore UNESCO World Heritage sites, forts, palaces, temples, museums, and much more on a journey through modern, mystic, and vibrant India. Visit Agra with its majestic Taj Mahal; the holy city of Varanasi; three cities in colourful Rajasthan; the medieval towns of Orchha, Khajuraho, and Ranakpur; and bustling Delhi and Mumbai. Senior Curator Deepali Dewan will provide expert insights into Indian culture and traditions.

COMING UP...

NEWFOUNDLAND CIRCUMNAVIGATION CRUISE

Embark with the ROM's Mark Engstrom on the trip of a lifetime aboard Adventure Canada's *Ocean Endeavour*.

JUNE 19 TO 29, 2016

INDOCHINE: LAOS, CAMBODIA, AND VIETNAM

Discover the history, cultural traditions, and breathtaking landscapes of "Indochine." The ROM's Sara Irwin will share her love of this region.

NOVEMBER 5 TO 21, 2016

ROMWALKS

Look for the purple umbrella at the ROMwalks meeting place!

DISCOVER YOUR CITY & BEYOND

Join fellow ROM Members and see Ontario in a new light

TORONTO NECROPOLIS

The Toronto Necropolis was established in 1850 and is one of the city's oldest and most historic cemeteries. Its picturesque location, collection of sculptures, and Victorian buildings also make it one of the most beautiful cemeteries in the city. Some of Toronto's finest examples of High Victorian Gothic architecture can be found in the fully restored entrance, chapel, and office. Beautiful stained-glass windows grace the interior of the chapel, which is a popular choice for services.

Meeting Place:
Cemetery entrance located at 200 Winchester St. at Sumach Street.
Saturday, July 16, at 1:00 p.m.

JARVIS STREET

Once the most fashionable address in Toronto, Jarvis Street retains many of its old mansions and churches and has acquired new architectural gems. A stroll down this broad avenue provides insight into its elegant past and energetic present.

Meeting Place:
The southeast corner of Bloor Street and Church Street.
Saturday, October 15, at 1:00 p.m.

ROMBUS

PORT HOPE AND COBOURG

HISTORICAL TOUR

Explore the history and architecture of Port Hope and learn about the Capitol Theatre, Helm House, and Bluestone House before stopping for a delicious lunch at the Carlyle Inn and Bistro. In the afternoon the tour moves on to Cobourg to see Victoria Hall and the American Cottages.

Meeting Place:
York Mills Subway (south exit, Old York Mills Road)
Members, $110; Non-Members, $120
Wednesday, April 27, at 7:30 a.m.

Please notify the Programs Department at 416.586.5797 at least three weeks in advance of any special dietary needs or mobility issues.

ROMwalks tours are free and offered exclusively to ROM Members. All ROMwalks and ROMbus events require **registration, as space is limited**. Register at **rom.on.ca/members/events or 416.586.5700**. Walks last approximately 1.5 to 2 hours.

JAPAN

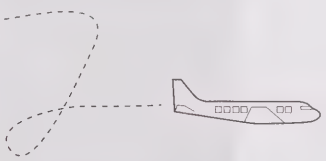
Medieval, mysterious, and modern, Japan will delight the eye and the palate. The ROM's Jack Howard will reveal the secrets of Japan.

MARCH 25 TO APRIL 8, 2017

NORTHEAST ITALY

Highlights include visits to romantic Verona, Palladian villas near Venice, Giotto frescoes in Padua, Bologna's leaning towers, food, wine, and much more.

MAY 8 TO 21, 2017



TRAVEL WITH US

For information on upcoming trips, contact ROMtravel at

416.586.8034
travel@rom.on.ca
rom.on.ca/travel

ANCIENT WITH AN EDGE

Inspired by our upcoming *Tattoos* exhibition? ROM Boutique's new jewellery designs will capture your imagination

INKED UP

Model Jerry Melo got his first tattoo 18 years ago and hasn't stopped yet. His favourite? Portraits of his two young daughters on his back. Go to page 23 to see more of his artwork.

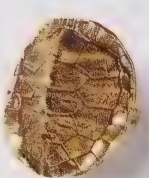
Fire and Bone skull **necklace** in bronze, $79.99.

MEMBERS

Get 20% off in-store and at rom.on.ca

Looking for the perfect piece of jewellery to complement your new tattoo? Are you drawn to designs influenced by some of the natural world's more unusual creatures? Are your tastes a little more Gothic? A sterling silver raven skull may be more your thing. Either way, these unique jewellery designs will be sure to make a distinctive style statement.

Alkemie starfish **cuff**, $199.99, starfish **ring**, in brass, $179.99.



Alkemie turtle shell **ring**, in brass, $179.99.

Alkemie butterfly **cuff**, in brass, $199.99.

Moon Raven **necklace,** in brass $149.99.

rom governors

creating the next century together

CULTURE BUILDING, CITY BUILDING

Welcome home to the ROM

Whenever I travel someplace new, one of the first things I like to do is visit the local museum. It's a great window into the culture and history of a place and its people. Museums are often at the heart of a city—as is the case in Toronto with the ROM—and offer a chance to reflect, discover something new, meet others in the community, and become part of exciting events and programs.

In this regard, one of the most important roles the ROM can play is in welcoming newcomers to Canada. Over $2 million in private sector support has been contributed to advance accessibility initiatives at the ROM. Working with our donors, corporate partners, and volunteers, the Museum is able to welcome 75,000 people each year through the ROM Community Access Network (ROMCAN). Programs like ROMCAN help to eliminate financial, social, and cultural barriers that might otherwise stand between the community and the Museum. Through our partnerships with over 40 community organizations in the Greater Toronto Area, including the YMCA, the Institute for Canadian Citizenship, and the Toronto Public Library, we are unlocking the ROM's power to engage, share, and inspire, and extending the Museum's reach to a greater diversity of visitors.

The ROM is committed to increasing the impact of ROMCAN by extending a Museum experience to 100,000 individuals this year, including at least 10,000 Syrian refugees. To learn more about how you can support important accessibility initiatives like ROMCAN at the Museum, please visit **rom.on.ca/access**, make a donation at **rom.on.ca/donate**, or call us at **416.586.5818**.

Susan

SUSAN HORVATH
PRESIDENT & CEO
RPC FELLOW

A DRIVE TO GIVE BACK

We were thrilled to partner with Hyundai Auto Canada for their **Test Drive a Hyundai, Make a Difference** initiative at Ontario dealerships this past winter. For every test drive completed between November 18th and December 23rd, Hyundai made a donation to the ROM. Together, in total we raised $50,000 in support of the Museum's highest priorities, which bring exciting programs, exhibitions, and collections to life!

New!

ROM CLASSIC GOLF TOURNAMENT

September 12, 2016
Beacon Hall Golf Club

Join us for a memorable day of golf in support of the ROM! Foursomes are available at $5,000 each and sponsorship opportunities start at $2,500. Contact Keiko Okutsu at **416.586.8064** or **keiko@rom.on.ca** for more information.

GET IN TOUCH

416.586.8055
susanh@rom.on.ca
rom.on.ca/support
@SusanH_ROM

A FAMILY GIFT INSPIRED BY A MOTHER'S DEDICATION

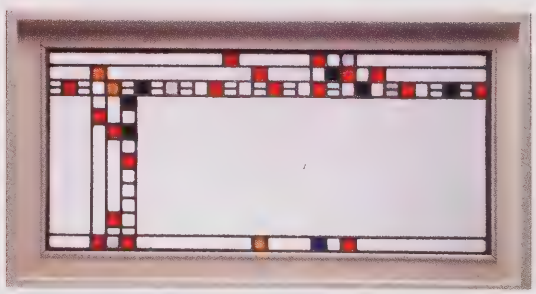
For the past 40 years, the ROM has been Barbara Chisholm's main volunteer endeavour. She has guided thousands of visitors through the Museum, sharing her love of decorative arts and European history with the public, a delight to all those with the good fortune to experience her lively and engaging storytelling.

"The opportunity to inspire people, to make the past meaningful and relevant, has been incredibly fulfilling," says Barbara. "And that opportunity came from the curators who offered their expertise and time, giving us the confidence to tell the Museum's stories." Moved by her dedication, Barbara's four children and their families made a generous gift to the ROM in her honour. Along with support from the Mona Campbell Endowment Fund, their gift will ensure Barbara's impact continues with a refresh of the Art Deco section of the Samuel European Galleries, which will become the Gallery of Modern Design.

Many newly acquired works by renowned designers associated with the Bauhaus movement, American design from the Jazz Age, and Scandinavian design from the '40s and '50s, along with examples of iconic post-war modern design, will join the Art Deco masterpieces already on view. The Museum is grateful to be able to shine a light on this world-class collection for visitors.

As Barbara's children have said, "The ROM was a regular topic of conversation while we were growing up. Mom's passion for learning instilled a sense of curiosity and love of history and art in each of us. Now it's our turn to say thank you."

To learn how you can support the ROM's Samuel European Galleries or honour a loved one with a gift to the Museum, please contact Katie McMillan at **katiem@rom.on.ca** or **416.586.5582**.



CLOCKWISE FROM TOP: Armchair, Hans Wegner (1914–2007). Platter, Stig Lindberg (1916–1982). Stained Glass Panel, Frank Lloyd Wright (1867–1959). Vase, Ercole Barovier (1889–1974). Two Door Cabinet, Paul T. Frankl (1887–1958).

Armchair: ROM2005.1071. Museum Purchase, Gift of Beatrice Fisher. Platter: ROM 2007.64.2 Museum Purchase. Two Door Cabinet: ROM 998.135.24.1-5. Purchased with the generous support of the Louise Hawley Stone Charitable Trust. Vase: ROM 957.103.2 Museum Purchase. Stained glass panel, ROM 2000.22.3 Gift of the Louise Hawley Stone Charitable Trust; Purchased by the Royal Ontario Museum with the assistance of a

A Love for the ROM Endures

MARKING THE LEGACY OF LONG-TIME MUSEUM VOLUNTEERS **JOANN AND RODGER MCLENNAN**

ROM volunteers and members of "The Martini Club" formed close friendships over decades of service.

As dedicated members of the Department of Museum Volunteers (DMV), Rodger and Joann McLennan led countless tours over the past 20 years, enrapturing visitors with their infectious enthusiasm and deep knowledge of the Museum's collections.

Joann, a native New Yorker, met Rodger while visiting a friend in Windsor, Ontario, in the late 1960s. Call it happenstance: a month later she moved to Canada, and they were married within a year. When Rodger got a job with the Scarborough Public Library in 1975, the couple settled in a charming Alpha Avenue home in Toronto's historic Cabbagetown. The affinity they would develop for the ROM would inevitably follow a similar trajectory.

"She was larger than life," remarks Marguerite Low, a long-time ROM supporter and fellow member of "The Martini Club," a close-knit group of volunteers that formed from the friendships developed over years of service to the Museum.

In addition to their time offered as volunteers, the McLennans financially supported numerous initiatives at the ROM. In 2009, they established the then-modest Rodger and Joann McLennan Endowment Fund, with the intention that it would grow to support research in natural history and world cultures. Inspired by the estate gift of Louise Hawley Stone, the ROM's first volunteer, whose bequest established an endowment at the Museum to support acquisitions and publications, the McLennans wanted to make a similar gesture. By joining the ROM's Currelly Legacy Society and leaving a promised gift in their will, they ensured that their fund, too, would have a lasting impact at the Museum.

The McLennan fund now provides a much-needed resource for ROM experts to conduct important fieldwork, pursue new research, and spark global collaborations that span disciplines—activities that enable the ROM's collections to inspire wonder and discovery. This legacy will engender the McLennans' same love of learning for visitors of all ages at the Museum, today and for generations to come.

"It's truly wonderful knowing that their generosity will continue to be felt at an institution they loved so much."

"It's truly wonderful knowing that their generosity will continue to be felt at an institution they loved so much," says Amy Brandon, the McLennans' goddaughter. "The ROM was their common ground."

LEARN MORE

Join the Currelly Legacy Society
Named after the first director of the ROM, the Currelly Legacy Society offers members who have made a planned gift to the Museum exclusive access to special events, including lectures and luncheons with ROM curators.
To learn more about leaving a legacy at the ROM, contact Janice Correa at **janicec@rom.on.ca** or **416.586.5578**.

NATURE'S STUNNING MOMENTS

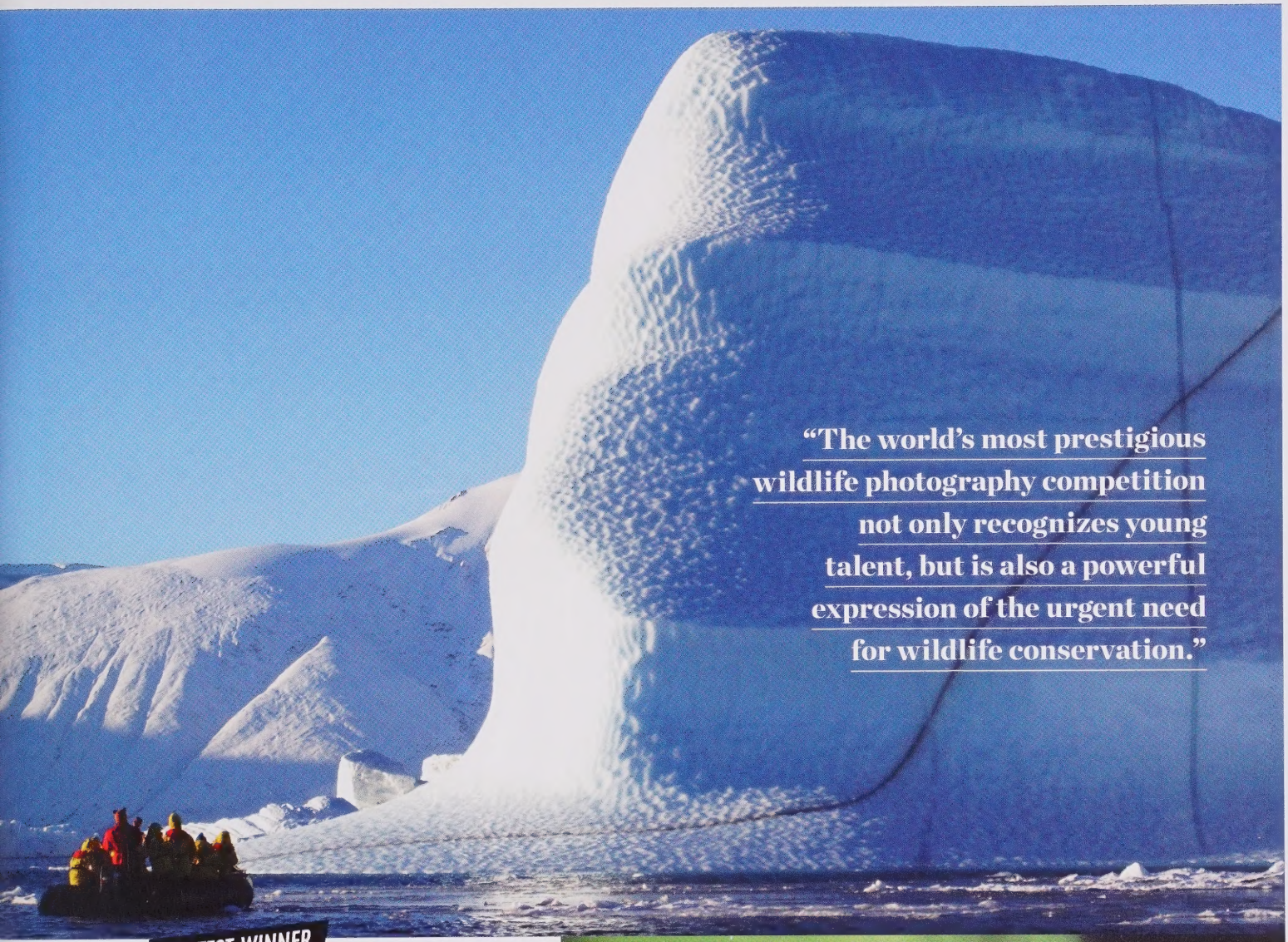
CAPTURED WITH QUARK EXPEDITIONS

The acclaimed *Wildlife Photographer of the Year* exhibition premieres at London's Natural History Museum each year, before touring more than 60 cities around the globe. From picturesque landscapes to striking flora and fauna, it showcases award-winning images of our natural world.

The ROM is proud to host the Canadian premiere of this awe-inspiring show, generously presented by Quark Expeditions, running until March 20, 2016. A leader in polar adventures, Quark Expeditions specializes in expedition cruising to the Arctic and Antarctica, and is committed to environmentally responsible tourism.

"Wildlife photography is one of the most popular activities our polar adventure passengers engage in, and we're delighted to participate in the promotion of this sustainable, creative way of interacting with, and honouring, some of the world's most rare and elusive creatures," says Andrew White, president of Quark Expeditions.

One of the most challenging forms of photography, a single picture may represent weeks of waiting behind the lens, incredible technical skills, and vast knowledge of a natural area or an animal's behaviour. The world's most prestigious wildlife photography competition not only recognizes young talent, but is also a powerful expression of the urgent need for wildlife conservation.



"The world's most prestigious wildlife photography competition not only recognizes young talent, but is also a powerful expression of the urgent need for wildlife conservation."

CONTEST WINNER

Wildlife Photographer of the Year is developed and produced by the Natural History Museum, London.

Presenting Sponsor

Media Partner

NATURAL HISTORY MUSEUM

Quark Expeditions®

CANADIAN Geographic

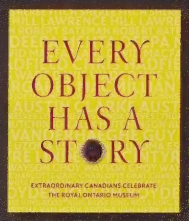
A WALK ON THE WILD SIDE

In Ontario, amateur and professional photographers submitted hundreds of images in a bid to be awarded the ROM's Wildlife Photographer of the Year. The grand-prize winner, Steven Rose from Scarborough, ON will have his photograph displayed at the Museum alongside the exhibition and enjoy an epic 13-day Arctic expedition for two, generously donated by Quark Expeditions.

"In a machine age, dressmaking is one of the last refuges of the human, the personal, the inimitable."

—CHRISTIAN DIOR

Commissioned by the ROM, **Passage #5** was designed by John Galliano for Christian Dior Haute Couture. This dramatic coat-dress was inspired by fashion illustrator René Gruau's drawings from the 1940s and 1950s and is a 21st-century reworking of Dior's 1947 New Look collection (his first).



See more ROM objects in *Every Object Has a Story*. Members' price $26.95 (regular $29.95). Visit the ROM Boutique or **shop.rom.on.ca** to purchase.

TULLE AND SILK FAILLE IN CLASSIC DIOR ROUGE!

EXPLORE THE ARCTIC

ARCTIC ICEBREAKER EXPEDITIONS

Legendary Russian icebreaker and polar pioneer, the mighty *Kapitan Khlebnikov*, makes its anticipated return to navigate uncharted terrains. Designed to power through dense pack ice, the ice-class *Khlebnikov* provides unparalleled access to the most remote areas of the Arctic.

BEST OF THE CANADIAN HIGH ARCTIC
Aug 22nd to Sept 8th 2016

ULTIMATE NORTHWEST PASSAGE
Sept 6th to 23rd 2016

SPECIAL GUEST
COL. CHRIS HADFIELD
ON BEST OF THE CANADIAN HIGH ARCTIC

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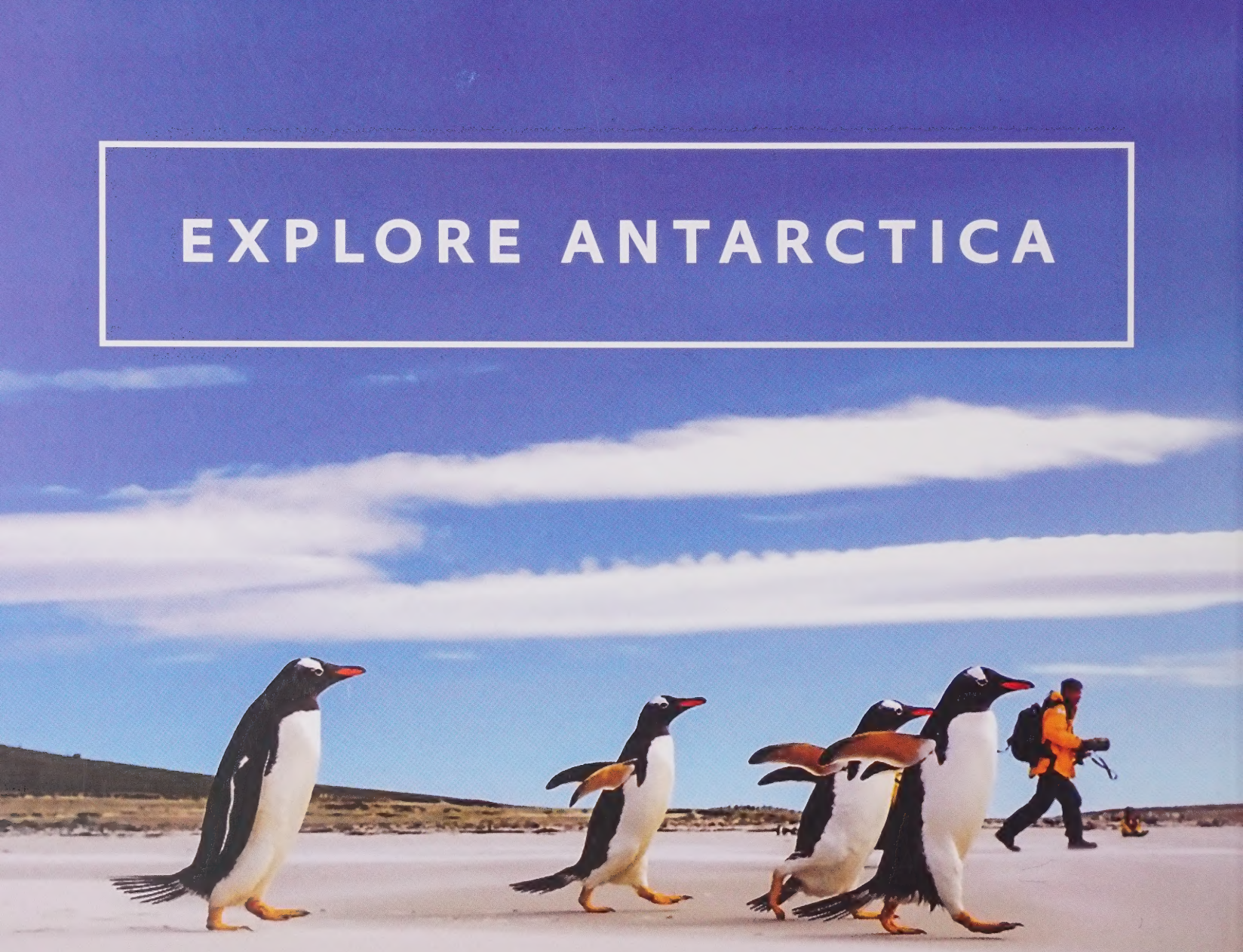
EXPLORE ANTARCTICA



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